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General Articles

DISTEMPER OF THE CAT*

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I accepted the invitation to read a paper on "Distemper of the Cat," before this Society chiefly because we have been carrying out some investigations into cat diseases and because I hope to obtain a mass of information—clinical and otherwise—from the members present which will be of considerable value to us in our work.

In August I communicated the results of the work we had done up to date to the N.V.M.A. Congress meeting and the discussion which ensued stimulated me to bring forward the subject again to-night.

The work we have carried out has been practically entirely confined to the disease described by Urbain (1933) as "Infectious Gastro-enteritis of Cats" though we have had the opportunity of making examinations of carcases of cats said to have died from diseases other than infectious gastro-enteritis.

One of the chief difficulties we have experienced has been the differentiation of diseases affecting cats—all of which have been classified as "distemper." Naturally, we have had to rely mostly on the diagnoses made by veterinary practitioners who have been good enough to let us have the carcases for examination. The terminology of many infectious diseases, especially of dogs and cats, is very loose to-day. There is room for an effective overhauling of disease nomenclature generally, so that when a condition is mentioned we will all know what exactly is meant. Concerning infectious diseases of the cat, terms like "distemper," "influenza," "show fever," etc., are used and I do feel that the various people who use them refer in many instances to entirely different etiological conditions. From our observations and investigations we would divide infectious diseases of the cat into two definite groups: (*a*) those affecting the alimentary tract and (*b*) those involving the respiratory tract primarily. There may be some overlapping of (*a*) and (*b*) as seen on *post-mortem* examination, but on the whole this broad division can usefully be made.

Smythe (1934), writing in *The Veterinary Record*, divides the infectious diseases of cats into four groups: (1) Epizoötic (or infectious) enteritis; (2) contagious ulcerative glossitis; (3) cat influenza; (4) feline distemper. It is probable that some of these conditions simply refer to the predominating disease conditions present in the group of cats under consideration.

In our opinion, infectious gastro-enteritis is the most important condition affecting cats as far as mortality is concerned and for that reason we have concentrated our efforts on typical cases of this condition.

Undoubtedly this condition is caused by an ultravisible virus. Hindle and Findlay (1932) demonstrated its presence in the various tissues of affected cats and more recently Urbain (1933), Jármai (1934), Lombard (1934) and also Leasure, Lienhardt and Taberner (1934) have amply confirmed the original observations. It is not my intention to deal in detail with the symptoms observed in affected cats: they are well-known to veterinary surgeons who have to treat such cases. One of the striking symptoms in our experimentally-produced cases is the constant high temperature found within two, four or five days of exposure to infection. This rise in temperature may quite easily be missed in practice, especially if the case is not seen in the earlier stages of the disease, for the temperature curve varies very much following the initial rise; it may rise still higher or it may drop and vacillate considerably. We do not agree that in true infectious enteritis the cat may die without showing any significant rise in temperature as has been stated by some observers. The course of the disease following infection certainly varies and recovery is not usual. In the experimentally-produced cases the characteristic vomiting found in naturally occurring cases may be absent and there is a tendency to constipation. Death may occur soon after the initial temperature rise, but we have observed cases in which the cat has lived for some days or even weeks. Cats which recover from a natural or artificially-produced attack remain healthy when exposed to further infection or when injected with further infective material.

Much has been written on the bacteriological rôle in infectious enteritis in cats. The various workers on the disease have recorded the finding of many types of micro-organisms and some have

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gone so far as to assert that a certain micro-organism was the actual cause of the condition. Hindle and Findlay showed definitely that the types of micro-organism found varied considerably and that in all probability none of them played any part in the actual causation of the disease. In our own work we found hæmolytic streptococci in one series of affected cats practically in pure culture in the various tissues and we were at one time inclined to the view that the streptococcus played some part in the naturally occurring disease. We showed that the addition of this culture to a filtrate containing the ultra-visible virus produced, when injected into susceptible cats, the typical disease but it ran a very acute course resulting in early death. More recent work indicates that the accompanying micro-organisms play no true part in the causation of the actual disease for it is a comparatively simple matter to set up typical infectious enteritis with organism-free filtrate of infected tissues. The various secondary symptoms and lesions may, however, be mostly due to the action of micro-organisms. In our experience, peritonitis and pneumonia are the important complicating diseases. In both, streptococci appear to play an important rôle. In one series of experiments we carried out peritonitis was found in practically every cat to which the disease was transmitted and was found even in the very early stages of the disease. We have formed the opinion that the kittens used for the transmission work may have been at fault, for this peritonitis with purulent exudate in the body cavity followed even contact experiments. In many transmission experiments no lesion except that in the intestine is found. The lesion varies from a simple congestion to actual necrosis of the mucous membrane. In some cases, naked-eye examination reveals only congestion of an extremely mild degree, but in the majority of instances actual inflammation can easily be detected—many loops of the small intestine being bright red in colour and easily seen when the abdominal organs are exposed. Changes in other organs would appear to depend almost entirely on the severity of the infection and the length of time during which the infection has been present. Lung changes are found in a proportion of natural and artificially-produced cases. Lombard found evidence of pulmonary congestion in 21 of 22 cases examined and he suggests that lung changes have been overlooked by most investigators. Our experience is that lung changes may certainly occur, but we do not hold that the proportion of animals affected is so high as Lombard found if one obtains specimens from various sources. We have found cases actually diagnosed as lobar pneumonia which on investigation proved to be infectious enteritis with a secondary pneumonia. The constant *post-mortem* lesion is found in the intestine and comprises some degree of inflammation: other lesions are, in our opinion, secondary and would not have been found apart from the virus infection. Micro-organisms, mainly streptococci and members of the Salmonella group, are usually isolated from such diseased lungs. I would emphasise once more, however, that lung changes are by no means an essential finding in infectious enteritis in the cat.

The infectivity of the disease is well-known. It is only necessary to expose a susceptible cat to a blanket, rug, etc., on which a diseased cat has lain to set up the typical disease. Veterinary surgeons who deal with cat diseases are well acquainted with the elaborate precautions they must take to ensure that premises in which affected cats have been kept are safe for the introduction of young cats.

For our experimental work we have had to breed kittens, for we soon found that kittens from outside sources were either non-susceptible or quickly developed diseases other than infectious enteritis when collected at the laboratory. We do find, however, that young kittens bred in catteries and not allowed freedom are practically always susceptible. Cats kept isolated, even though they reach adult life, are still susceptible. Cats which have freedom, on the other hand, are seldom susceptible no matter at what age they are tested. We like to regard infectious enteritis in the cat much in the same light as we do true canine virus distemper, *viz.*, that many cats become infected to a mild degree but recover and are immune, that they continue to receive small doses of infection during their ordinary lives and so their immunity becomes raised higher and higher till they can withstand large doses of highly virulent virus. The cat in confinement has not the same chance of receiving infection and developing immunity and thus even a virus of relatively weak infecting properties may cause serious losses when introduced. Periodically there would appear to be in various parts of the country virus of extraordinarily high virulence which attacks the cat population and causes many deaths. It seems probable in such cases that either there has been little or no exposure to virus for some time, or that the virus itself has become unduly potent, or, again, that invading micro-organisms coupled with the virus may be responsible for the severe mortality.

Secretions from the body of infected cats apparently carry virus. Hindle and Findlay showed that washings from the naso-pharynx were capable, even after filtration, of setting up the typical disease. We have never actually confirmed this observation but we have shown that the spraying of the nose with filtrates of spleen from an infected cat resulted in a typical

attack of the disease, thus showing that the respiratory route may be one through which infection may occur. In all experiments we have found it very necessary to use kittens which we knew had not been exposed to the disease and were thus in a state of high susceptibility.

As with many virus diseases, prophylaxis of infectious enteritis in the cat can be accomplished by the injection of the modified virus. Urbain showed that formalised infected tissue was a good antigen and we have amply confirmed his observation. In the laboratory we have had no difficulty in preparing formalised vaccine of high protective potency. The degree of potency of the virus in the infected tissue used in the production of the vaccine determines to a large extent the efficacy of the vaccine. This applies to vaccines made from most viruses. A subcutaneous injection of a potent vaccine is followed in the course of a day or two by the development of specific immunity of high order: such an inoculated cat will withstand the effects of large doses of virulent virus either injected or conveyed by contact. The immunity produced by the vaccine is, however, in all probability, of temporary duration only. Two doses of vaccine given at an interval of several weeks create a higher and more lasting degree of immunity than is obtained by a single dose, but here again the immunity may not be of lasting order. Best results will be obtained by introducing living virus into the body of the cat. This may be done by actually injecting the virus into cats in a state of immunity produced by vaccine or by placing such cats in actual contact with infection. In the laboratory we have shown definitely that the injection of vaccine followed by that of living, virulent virus is productive of good immunising results. Up to the present we have not attempted to immunise cats in the field by this method. We have confined our experiments to the use of vaccine only and subsequent exposure to infection at Shows, etc. In this work we have had the collaboration of Mr. J. Stewart, M.R.C.V.S., Croydon, who has obtained facilities for field trials. I think he will be able to tell you of the good results he has had in which, of the many cats injected with vaccine and exposed to infection at Shows, etc. within a week or two, not a single one has fallen a victim to enteritis, while unprotected cats have fallen sick and died from the typical disease. I would here like to express my great appreciation of the facilities Mr. Stewart has given us and for the vast amount of work he undertook in injecting cats and making the necessary arrangements. We have been in close touch with him all the time and have had many conferences together.

I had hoped to be able to tell you something of the use of hyper-immune serum to-night. Unfortunately, our work has not progressed sufficiently to allow me to make any statement. We know from the work of others (Hindle and Findlay, 1932, Leasure, Lienhardt and Taberner, 1934) that hyper-immune serum can be produced in cats. It will be a matter of time before a reliable method of producing such a serum on a reasonably large scale is elaborated. The great handicap to all work on this disease is the obtaining of specially bred susceptible cats. This is going on all the time at the laboratory, but because no other laboratory animal is susceptible to this infectious enteritis of cats, a large number of susceptible cats is necessary for the various experiments.

From the discussion which took place after I gave the paper at Edinburgh last August, as well as from the letters I have received from veterinary surgeons, and from our own observations, it seems quite clear that infectious enteritis is but one of the infectious diseases of cats. I have already indicated that there is a group of diseases of cats which affect the respiratory tract. This group of diseases must not be confused with respiratory complications which may be found in true infectious enteritis whose cause has been shown to be an ultravisible virus. Apart from the clinical observations of which we have many records, we have some experience of actual immunity experiments on this point. Cats sent to us suffering from the pure respiratory type of disease have been shown to be devoid of enteritis virus in their tissues. Outbreaks of the respiratory type of disease present a different train of symptoms. The symptoms are well described by Smythe (1934), and I think Major Hamilton Kirk has also described them, in *The Veterinary Record*. Sneezing is an early symptom followed by nasal discharge, at first serous in nature but quickly becoming muco-purulent. There is also a conjunctivitis and there may be involvement of the throat, tongue, etc. It is my opinion that in this type we have a group of diseases, but that in all probability they have the same initial cause and the various symptoms shown and lesions developed depend largely on the special associated secondary micro-organisms. Although we have not had opportunity to devote much study to this group, it is practically certain that it is distinct from true infectious enteritis: the evidence is based chiefly on immunological work. Now that we can eliminate infectious enteritis in our experimental cats by suitable immunisation the study of the respiratory group is somewhat simplified. In some veterinary practices it would appear that the respiratory group of diseases gives more trouble than does infectious enteritis, but the prophylaxis of the latter should go a long way towards preserving the special families of valuable cats and assisting veterinary surgeons to cope with at least one of the serious diseases of cats.

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Discussion

Dr. E. Hindle: First, I should like to thank the President and members of the Society for their kindness in inviting me to be present to-night. I welcome the opportunity very much, especially after hearing Major Dalling's address; I think you will all agree with me that it has been a most important contribution to our knowledge of the subject.

As you are possibly aware, I first took up the subject of cat diseases about five years ago. Subsequently, Dr. Findlay was associated with me in connection with the bacteriological work, and as a result of our investigations, extending over two or three years, we arrived at certain conclusions. I would emphasise, however, that all our work was done with cats which had not been bred under quarantine conditions, and that any results we obtained were subject to confirmation as soon as a supply of quarantine-bred kittens was available. We were able to show that the disease we were dealing with was caused by a filterable virus, and also that a reasonable degree of protection could be afforded by either attenuated virus or combined virus and immune serum, and left it at that until there was a possibility of getting kittens bred under quarantine conditions. I am very pleased that it has fallen to such able hands as Major Dalling's to carry on this work. (Applause.)

With regard to the results which he has given, I of course accept them unreservedly, with one very important exception, namely, the question as to how many different types of infectious diseases one is dealing with in these fatal epizoötics of cats which, at that time, were generally grouped together under the term "feline distemper." I would say at once that in our work we accepted statements as to the clinical aspects of the disease appearing in Professor Wooldridge's well-known work, and also in those of Major Hamilton Kirk, and Hutyra and Marek. Veterinary opinion seemed to be in general agreement that at any rate from a clinical point of view, feline distemper was a widespread disease with protean symptoms. Our results, based on the examination of more than 300 infected cats from diverse sources, showed that no matter where we obtained these animals, we were able to reproduce gastro-intestinal symptoms in kittens inoculated with infective material from them, and this was the only constant pathological feature of the cats which we infected. With some diffidence, therefore, we came to the conclusion that many of the various clinical symptoms that had been described were merely the result of secondary infections, and our bacteriological examinations tended to confirm that view. The immunological test is, of course, the crucial one. Work on virus diseases has shown that it is often extremely difficult to link up the clinical symptoms with the etiological agent. I might instance yellow fever, in which you may have all stages between typically severe and often fatal cases with destruction of the liver, gastric hæmorrhages, extreme jaundice, etc., etc., and a type of the disease in which no obvious symptoms can be detected, yet which produces the same immunity. In canine distemper you get a very wide range of clinical symptoms and yet there is no clear evidence that you are dealing with more than one disease.

As previously mentioned, we succeeded in the immunisation of a certain number of kittens. These animals were kept for nine months in the laboratory and inoculated repeatedly with infective material obtained from cats dying after various outbreaks of so-called "show fever," or "cat distemper," and yet not one of them showed any signs of illness. It may be that we failed to obtain cats infected with a different virus, but certainly they showed very diverse clinical and pathological features. Consequently, until more definite experimental evidence is available, I prefer to regard the virus of infectious gastro-enteritis as the primary cause of the various epidemics known as "feline distemper," "show fever," "feline influenza," etc., etc., though if vaccinated kittens can be constantly infected with material from other outbreaks I shall be prepared to alter my opinion.

Finally, I should like to say how very much I have enjoyed being here to-night, and to express my thanks to the meeting and to Major Dalling. (Applause.)

The President (Mr. L. S. Balls), in declaring the paper open for general discussion, said that he would like to assure the essayist how greatly he was interested in the subject, which was a most important one, and how much he appreciated the paper.

Mr. Henry Gray observed that, as the oldest member in that room, as well as having as much experience as any, he thought he was qualified to speak on that subject. He knew nothing about it bacteriologically and he was very pleased that Major Dalling had come to the conclusion to which he had himself come more than 30 years ago and which he had since urged in his section on disease in Cassell's "Book of the Cat," published in 1903, in his contribution to Hoare's "System of Veterinary Medicine," Vol. 1, 1912, in the later numbers of the *Veterinary News* before it closed down and in many other works and lay journals such as *Fur and Feather* and *The Bazaar* and in the fourth edition of Hoare's

"Veterinary Therapeutics," 1924—that infectious enteritis was a disease clinically diametrically opposed to distemper.

Infectious enteritis was a disease practically confined to kittens under six months and rarely seen in young cats under nine months, whereas distemper attacked animals of all ages and one attack did not always give immunity to future exposures. He had known it attack adult cats several times. In this respect it corresponded more to human influenza, which people sometimes thought was contracted from cats suffering from distemper. He had made numerous *post-mortem* examinations in *true* infectious enteritis and had never yet encountered pneumonia among them. When cats were under experimental conditions in strong concentration it was not unusual to find catarrhal distemper breaking out with no symptoms of enteritis. It spread much more rapidly among cats than did canine distemper. A sneezing cat among a lot of cats quickly spread unless strict isolation and hygiene were rapidly adopted. This was no doubt due to the animal throwing the virus a long distance when it sneezed.

As to infectious enteritis, he knew one lady who on twelve different occasions lost her kittens, each introduced to her house after varying intervals. They never showed any other symptoms than the classical ones of that malady, which usually killed the majority within 24 to 60 hours. If they survived longer than four or five days there was a chance of recovery, especially if they developed stomatitis or glossitis. He had never found any treatment of use in this condition, but he had seen some recover after a ½ grain tablet or two of pheno-barbitone, which acted as a hypnotic. He noticed that the Jen-Sal-Salsberg Laboratories, Kansas City, Mo. U.S.A., distributed a serum, discovered by the American workers on this malady, which they claimed to have cured kittens within four to five days.

He quite agreed that there were many diseases of the cat which were confused; for example, there was cat diphtheria, which was thought by the late Dr. Klein in 1896 to be conveyed to the human being. (*Vide Report of the Medical Officer of the Local Government Board for* 1896 and Klein's "Micro-Organisms and Disease," third edition, pp. 312-314, 1896.) At the time of this statement he challenged it because he had seen many outbreaks of this disease in which all sorts of people were kissing and hugging the victims without one of them contracting the malady. Sir John M'Fadyean, to whom some of the material was sent, failed by experiment to discover the presence of any diphtheritic bacilli in the false membranes, nor could he convey it by feeding the kitten on milk containing the false membrane (*Journ. Comp. Path. & Therap.* Vol. ix, 1896, pp. 46-47 and Hoare's "System of Veterinary Medicine," Vol. 1, 1912, pp. 317-318). Some 30 years later Dr. Savage, Chief Medical Officer, County of Somerset, in a series of experiments on cats failed to convey to them human diphtheria. Until then medical men had the obsession that cats gave human beings the disease.

As in the horse, pig, guinea-pig, rabbit and other fur-bearing animals, the cat had an infectious pneumonia, which was often accompanied by septic, purulent or serous pleurisy. Not infrequently it attacked kittens or young cats in a house or cattery, where it occurred as a veritable enzoötic. Most of the cats affected with distemper recovered, whereas in infectious enteritis 90 to 95 per cent. succumbed.

Concluding, Mr. Gray said that he was very grateful to Major Dalling and Dr. Hindle for bringing that discussion forward, but he must say that in his opinion, there was nothing new about those two different diseases, as shown by the references he had given. He was pleased to see that his past observations had been more or less confirmed by the able gentlemen who had addressed them that evening. He had always been of the opinion that by the study of the diseases of animals the human race was going to be benefited.

Mr. James Stewart said that he would like first of all to thank Major Dalling for his excellent paper, which he was sure had interested them all. He was not going to enter into the controversy as to whether there were one, two, or more infectious diseases of the cat, but merely to relate his experience of the value of the vaccine prepared by Major Dalling.

His first experience with it was in an actual outbreak of infectious enteritis, confirmed by *post-mortem* examination. There were twenty-three susceptible cats in the cattery; three had died when he first saw them, so he decided to use the vaccine. The total number that died was nine, while the remaining 14 showed no symptoms of the disease whatever. He thought that was rather encouraging. (Hear, hear.)

His second experience was in another large cattery having from 20 to 30 cats. One was a Siamese kitten (which breed of cats, as they knew, was especially susceptible) and this cat was diagnosed at a laboratory as having died from infectious enteritis. The whole of the remaining cats in the cattery were given doses of vaccine within a few hours of that diagnosis being made and no other cases developed.

During this present show season he had vaccinated something like 150 susceptible cats, and although numbers of deaths from infectious enteritis had been reported amongst the animals exhibited at these shows, in no single instance did the inoculated kittens show any symptoms of the disease. One instance was particularly remarkable; he inoculated three kittens which were going to be exhibited at the Siamese Show early in the season from a particular cattery. Subsequent to their return from the Show there was, shortly afterwards, a severe outbreak of infectious enteritis. These three kittens survived but two other kittens, kept in the same pen, died. That seemed to show that the vaccine was definitely efficient and would at least protect kittens for a considerable period. Exactly how long that period was remained to be discovered, but it seemed clear to him that if show cats were vaccinated and then shown it was now possible to immunise them against infectious enteritis for the whole show season.

He had one other case in mind where the immunity appeared to last for two to three months; this cat was inoculated by him. It was bought by a lady, who bought two other kittens from other sources. One had been at a particular show and within a few days it died from infectious enteritis. Another one went down with the disease the following day and it also died. The third kitten, which he had inoculated about two months previously, and which was the only one to be so immunised, did not turn a hair.

Major G. W. Dunkin, when invited by the President to contribute to the discussion, observed that he had not much to say except that he felt that he knew less about so-called cat distemper than when he came there. Mr. Henry Gray had not helped him greatly by taking them back

through several decades with remarkable rapidity; but there was one point in regard to what Major Dalling had said, in which he thought that the essayist had helped them all very considerably in elucidating the problem, and that was in his refusal except in the title of his paper to describe the disease as cat distemper. He had, Major Dunkin thought, very properly contented himself by describing the disease according to the symptoms which he had observed, and that was the disease which he had worked with, and was working with, so successfully.

The whole subject of virus diseases in the lower animals was, of course, of tremendous interest to those of them who were engaged in laboratory work. He was speaking with great hesitancy now, but he would like to know if Major Dalling or someone else could tell him what was the incubation period of infectious gastro-enteritis in cats and what was the length of time immunity lasted after an injection of vaccine alone. He was greatly pleased to hear Mr. Stewart tell them that, in his opinion, when a cat was vaccinated against this specific contagious gastro-enteritis it was practically certain that it would pass through the show season satisfactorily. He wondered if they were expected to infer from that that in his (Mr. Stewart's) opinion there was only one serious contagious, rapidly fatal, disease of cats, and that, after the show season, the cat might be susceptible again until it had had virus.

There was, perhaps, an analogy that could be drawn with dog distemper, and he mentioned it only in the sense that when people talked about cat distemper he supposed one was entitled to assume that all cats were susceptible; if they were not, then the title "cat distemper" was wholly wrong. It had been his good fortune to have sent him on occasion organs from various members of the larger cats, which were alleged to have died from cat distemper, and it might be of interest if he told the members what occurred. As many of them knew, those who had the responsibility of running Zoos were always apprehensive of this disease among the larger cats. In 1929, they had the spleen of a caracal lynx sent them, and the opinion expressed by the gentleman who sent it was that it was a case of cat distemper. His (Major Dunkin's) interest at that time was as to whether or not such a disease could be transmitted to dogs and ferrets, and in that instance they utterly failed in their attempt to do so. Then they had sent them the spleen of a leopard, also alleged to have died from cat distemper, and in that case, with the help of Major Dalling, who had been good enough to send them some cat distemper spleen, they were able to apply the complement-fixation test, but there was no fixation of complement when using either cat or dog distemper spleen as antigen, which indicated to his mind that the two diseases were not the same and that the leopard disease was not this disease of domestic cats which they were discussing. Then they had a young lion cub sent them, having had again what was described as possible cat distemper; it had had fits, and when he received it it definitely had chorea. He was hoping that they might get convalescent serum from this beast, with a view to carrying out experiments to ascertain whether there was any connection between this disease and cat distemper. Once again they failed in their attempts. He suggested that that was very remarkable, because dog distemper was a disease which affected all members of the Canidæ Family. Incidentally, it broke the rule by being also communicable to members of the Mustel tribe. The cat tribe were all under one family and yet in four of the species of that same family a disease had been called cat distemper, and he was convinced in his own mind that they were different diseases.

That was perhaps of no immediate interest to many of those present, he supposed, but it was, he thought, of more than passing interest to those who came into contact with domestic cats because it bore out very strongly what Major Dalling had said and what had been confirmed by Dr. Hindle, that probably there was more than one condition. However, he was going so far as to congratulate Major Dalling that night because at any rate he had gone this far—he had been able to immunise cats satisfactorily against a disease, the symptoms of which he had described, which were recognised by the cat practitioners and which, perhaps, with a mild stretch of the imagination, might be called cat distemper—altogether he hoped it would not be.

Professor G. H. Wooldridge observed that, like other speakers, he owed a deep debt of gratitude to Major Dalling for his very excellent work and for the very lucid description of it he had given them that night. He was afraid that some of his own views were undergoing some modification in respect of those diseases of cats, but he was not yet quite convinced that the views he had held and expressed for some time were altogether wrong. He was rather more disposed to agree with what he understood Dr. Hindle to say, that those serious diseases of cats which showed varying manifestations had a common etiological cause and that many of the variations exhibited were due to secondary infections. It did not convey very much conviction to him when it was pointed out that in an outbreak of disease amongst cats, which was highly contagious, the majority of them died with intestinal lesions and very few pulmonary lesions. He bore in mind that in human influenza they got outbreaks at different seasons that were described at various times as influenza of the pneumonic or of the gastro-intestinal type, and he thought there was some analogy between the two. In very much the same way we got in dog distemper, following upon the primary virus infection, a series of secondary infections setting up a different train of symptoms and yet there was the same primary cause. In these diseases of the cat, therefore, he felt that in many instances one might get varying symptoms if one had secondary organism infection which was enabled to operate much more rapidly and seriously when superimposed upon the initial virus infection. Nevertheless, if these organisms were highly concentrated they might produce lesions in the absence of virus infection. He thought that various workers had shown that *B. bronchiseptica* in the dog might produce pulmonary lesions without any virus infection at all. He would place infectious enteritis in cats in the same category, believing that the virus that Major Dalling had been able to show as the primary cause of that condition would prove to be the same virus, or perhaps a different strain of the same virus, which in other outbreaks was responsible for the pulmonary disease of cats. He had no laboratory experience to confirm those views but he held them fairly strongly as the result of close and careful clinical observation.

He had noticed that in many instances when cats had died very rapidly there was very acute fever and the only lesions he had been able to discover on *post-mortem* examination had been a more or less intense congestion of the ring around the ileo-cæcal valve. In cases that had

lived a little longer they had had a more extensive congestion and enteritis, as described by Major Dalling. In kennels where cats had been kept he had had that run through the majority of the cats, but here and there there had been a case with pulmonary complications and in other cases there had been no lesions at all in either set of organs. The experience related by Mr. Stewart tended to confirm him in his view. He (Mr. Stewart) recorded cases of cats immunised, as described by Major Dalling, and these had been to a series of shows, had returned home and had shown no ill-effects whatever. If there were several distinct virus diseases he could not credit that immunisation against one of them would result in immunity to the others when cats were exposed as they knew to be the case in cat shows.

The position at present was, however, a very difficult one and one was very hesitant indeed in expressing anything more than a tentative view, which, as he had already said, had undergone some modification but by no means yet a complete change.

The Reply

Major Dalling said that he had enjoyed the discussion very much indeed. A point on which there was some difference of opinion was whether or not more than one disease existed in the cat. He granted that Professor Wooldridge's view was somewhat strengthened by the experience Mr. Stewart had related to them. One would have expected that some of those 150 cats would have picked up something else at the show although they were protected against one of the diseases in question. On the other hand, even 150 cats was not a very large number to work on and he thought they would, as Professor Wooldridge said, have to wait a little longer before they were dogmatic on the point. In the laboratory they had been able to infect cats artificially with enteritis and some had recovered. These cats as well as some which had been artificially immunised against enferitis, had been exposed to infection of the respiratory type as he had described it, and they had developed catarrhal symptoms. It might have been that the immunity produced in those cats was not of a very high order, or that their diagnosis, in cases which recovered from contagious enteritis, was not correct.

Dr. Hindle's work, of course, stood out very distinctly. To Dr. Hindle and his colleague, Dr. Findlay, must be accorded the honour of having shown that an ultra-visible virus was present in this disease of cats. They certainly showed that there was an ultra-visible virus and that in many of the cases with which they worked enteritis was present.

Major Dunkin had asked what incubation period was found in connection with enteritis. Artificially they could produce the disease within two or three days. A rise of temperature generally began on the second day and he would say that the incubation period was between two and four days. Major Dunkin also desired to be informed as to the duration of the immunity produced as the result of the use of the vaccine. They did not know that exactly, but they did know that cats which had received a dose of that vaccine were still very resistant one month afterwards to a large dose of potent virus. They had not tested the immunity to a dose of vaccine for a longer period than that.

Continuing, Major Dalling said that he must ask them to bear with him because of the difficulty they had in this investigation, for they had to breed cats specially for the purpose. It was very doubtful whether cats, except those bred under conditions of strict isolation, were suitable for the work.

It would be a question of further experimentation to decide whether virus itself gave a long immunity, whether virus was necessary in immunisation work, whether or not more than one disease was present, and lastly, whether hyperimmune serum could be produced on a large scale.

THE ONE PORTAL

[Contributed]

For some months in your contemporary *The British Medical Journal*, a series of letters from correspondents has been published on the question of the medical qualification to practise. The question arose out of a letter written by Sir E. Graham-Little in which he proposed that the Senate of the London University should institute a new Degree in the Faculty of Medicine which he suggested might be called "Bachelor of Medical Sciences," attainable after a three-years' course of study. The suggestion was made because it had been found that of the students who entered for a medical degree, only a small percentage stayed the course and took their degree, the majority being content with the qualifying diploma of the Conjoint Board. If medical students could sit for a degree examination before being eligible for the Final Conjoint, the reproach that the London Medical Schools produce very few actual graduates of the University would be removed.

Subsequent writers criticised the final examination for the London Medical Degree, and made suggestions for its improvement. In *The British Medical Journal* for January 26th, however, a new turn was given to the discussion by a letter signed "A Layman." This correspondent showed that the problem really was as to whether it was practicable, assuming it to be desirable, that the academic degree of a university should be at the same time a licence to practise. He asserted that experience had shown that it was not practicable. The remainder of his letter is quoted *in extenso*:—

"A degree of a university is, and I hope always will be, evidence of a definite standard of academic education, and must not, I think, be confused with a legal qualification—a test of technical ability—to practise a profession. A university degree in law or in divinity, for example, does not *ipso facto* give the right to the graduate to practise his profession; for the Law Society, the Inn, or the bishop demands an examination in what may be called the technical aspect of the graduate's vocation. And, be it noted, a university degree is not a *sine qua non* for the solicitor, barrister, or minister of religion. Why then, should the medical and surgical degrees of our universities be the only academic

distinctions which we are content to leave at the level of a licence to practise?

"As long ago as 1872 this position was recognised, for in that year, when there were in England only four universities—Oxford, Cambridge, London and Durham—granting registrable medical degrees, they, together with the Royal College of Physicians of London, the Royal College of Surgeons of England, and the Society of Apothecaries of London (the only other Corporations granting registrable qualifications), prepared a scheme for constituting an 'examining board in England' for the purpose of conducting a common final examination for admission to the Medical Register; and the university degree was to be conferred only on those who, being otherwise eligible, had passed this examination and were, in fact, eligible to practise their profession. Why this scheme did not materialise—a legal point in the Charters of one of the bodies concerned prevented its accomplishment—is of little importance now, but its ashes remain in the present 'examining board in England' of the Royal Colleges—popularly known as the Conjoint Board. Various other attempts—always with the same object in view, and generally on the initiative of the Royal Colleges—were made during the subsequent 25 or 30 years, but the rapid rise and development of new universities—each with its own vested interests to consider—added to the difficulties of each succeeding effort.

"To-day there are 18 universities and five licensing corporations in Great Britain and Ireland (England alone has ten universities, besides the two Royal Colleges and the Society of Apothecaries) who grant qualifications in medicine and surgery which are admissible to the Medical Register. An analysis of the figures published by the General Medical Council over four recent years shows that, as far as the 12 licensing bodies in England are concerned, the average percentage of passes in the subjects of medicine, surgery and obstetrics varies from 53·47 to 80·12. The difficult conditions, both educational and economic, of the over-crowded and ever-growing curriculum of study demanded of the medical student to-day only emphasise the necessity for some sort of co-operation between the various licensing bodies. As far at least as England alone is concerned such co-operation should not be difficult, and, in fact, I believe that draft plans for some such scheme are actually in existence.

"And the alternative? If a movement in Parliament, quite possible in these days of democratic control, should suggest the institution of a medical service safeguarded by a State examination, that movement will have behind it the example of other countries. The development is quite a possible one, and would it not be well that the universities and corporations should agree among themselves now upon a common form of entrance rather than await action from without? It does not require imagination to visualise the result. Every university and licensing corporation will at once lose its own individually, as far at least as medical education is concerned, and not even vested interests will save it from becoming little more than a cog in the wheel of State, oiled and driven by a bureaucratic Ministry of Health with the full support of the public. If, on the other hand, some such scheme as has been indicated were actually agreed upon *now* by the universities and corporations concerned, whereby one common final qualifying examination for admission to the Medical Register were instituted, medical education and practice in this country would be in an impregnable position when the attack is launched from the political side."

Sir Ernest Graham-Little's reply to "A Layman" declared that he himself was in favour of a very much simplified medical qualification obtainable after a period of four years' training which would give admission to the Medical Register and which should be compulsory upon all persons who wish to practise any branch of the healing art. The points made by Sir Ernest were:—

(1) That the medical curriculum urgently called for overhauling and simplification; that greater attention was required to the basic subjects needed by the general practitioner in his daily work—medicine, surgery and midwifery; and that relinquishment must be accepted, however reluctantly, of the ideal now no longer realisable of making the medical student know "something of everything" before he achieved registration.

(2) That opportunity should be taken of this position to institute a simpler qualifying examination which would insure the public against incompetence of its medical advisers, regular or irregular, to deal with the every-day emergencies of medical practice.

Sir Ernest is doubtful, however, whether this aim could be achieved by "agreement between the universities and corporations concerned." He thinks the change in the requirements for registration would have to be imposed upon the medical profession by some supreme authority outside it, such as Parliament itself. He adds: "University degrees in medicine would, of course, be completely untouched by such a change. They would not *per se* be qualifications to practise, but they would doubtless be essential requirements for appointments on the staffs of hospitals, etc.

. . . . .

The scheme outlined as desirable for the medical qualification is so much like what already

obtains in the veterinary profession that it called forth a rejoinder from Professor McCunn which was published in *The British Medical Journal* for February 9th. His letter reads as follows:—

"I have followed with great interest the correspondence relating to the London University and its medical schools which has from time to time appeared in your columns, and the letter from 'A Layman,' which appeared on January 26th, to my mind absolutely fits the case. As a member of both the medical and veterinary professions I would like to support 'A Layman's' proposal that there should be a common or standard final examination for admission to the Medical Register.

"In the veterinary profession the problem was solved as long ago as 1844, when one body was created to take over the examination of students and the granting of the licence to practise. There are now five veterinary colleges training students for the examinations of the Royal College of Veterinary Surgeons. The diploma granted by the Royal College is the one registrable qualification recognised in this country, and the uniformity of the standard of examination is assured by the appointment of one examining board which visits all centres. Veterinary students who desire to take a degree in veterinary science have every facility to do so, but the degree does not confer the right to practise, and it is not generally granted until the candidate has passed the final examination of the Royal College, and so has qualified for registration. The Royal College diploma is the hallmark of a one-portal system of entrance to the profession. The university degree is an academic one, and should, of course, be evidence that the holder has reached a higher standard of professional qualification, but cases are not unknown in which a candidate has failed at the examinations held by the Royal College but has passed an examination in the same subject or subjects held by one of the universities. This, of course, is due to the varying standards required for a pass, and 'A Layman's' statement that the average percentage of passes in the final medical examination varies in twelve centres from 53 to 80 per cent. shows that a man who has passed at one centre might have failed if he had been educated and examined at another. This unsatisfactory state of affairs is completely eliminated in the veterinary profession by the institution of the one-portal system of examination for registration purposes."

. . . . .

This letter is followed by one from a doctor who reminds readers that the British Medical Association expressed the view many years ago that there should be one-portal entry to the profession, and the fear is expressed that unless the demand for such an improvement does not come from within the profession, it may be imposed from without.

I have invited you to devote considerable space to this question, thinking it important that veterinary surgeons should be made aware of what is going on in the sister profession in regard to the standard of qualification and registration. There have been those who have advocated the view that university degrees in veterinary science should entitle to registration. The state of affairs which obtains in medicine should be a warning to let well alone. Let us hold fast what we have got, for our present enviable position was only secured after many years of struggle.

Clinical Communications*

TUMOUR OF PYLORIC PORTION OF THE STOMACH IN A DOG

G. H. WOOLDRIDGE, F.R.C.V.S., M.R.I.A.
and
J. W. H. HOLMES, M.R.C.V.S., D.V.S.M.
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The subject was a male Alsatian dog, 8½ years old, estimated weight about 55 lb.

The dog was brought in for examination on January 12th, 1935, with a history that it had been ill for about a week, with indifferent appetite and occasional vomiting. On examination nothing positive could be found, and palliative treatment was adopted. On re-examination a week later, the dog was reported to be no better, and by this time was not feeding well; some falling off in condition was noted. The temperature, as on the former examinations, was 101°F. A sample of urine was obtained, and was negative on examination. Palliative treatment was continued. He was next seen on the 26th, and was still not feeding, and vomiting was more frequent. He was then admitted to hospital for observation.

On admission, we were able to examine the vomit for the first time. It consisted of a yellowish-brown slimy material, but no food substance. Although his condition was not quite so good as when first seen, there was at this time no marked wasting. A careful palpation of his abdomen failed to reveal any abnormalities. On the 28th he again vomited a similar material. Urine was again examined with negative results. The next two days the dog appeared to be very well, feeding normally,

* All the communications reproduced in this Section were made to a meeting of the Central Veterinary Society held at the Conway Hall, Red Lion Square, London, on February 7th, 1935.

and not vomiting. On the 31st, vomition recurred, and the owner consented to an X-ray being taken. This was carried out before and after the administration of a barium meal, but examination of the films failed to confirm any suspicion of the presence of a foreign body in the stomach. Palpation of the abdominal cavity and examination *per rectum* had been negative throughout. By this time there was a more marked loss of weight. The temperature was 102° and urine examination still negative. There was no vomition on February 1st, but it recurred on the 2nd. Urine examination on this occasion gave a slight re-action for albumen with the nitric acid ring test and the sulphosalicylic acid test. Microscopic examination was negative. On February 4th, the dog vomited frequently, and again on the 5th. By this time he had rapidly become very thin, was dull in demeanour, and showed discomfort when rising or lying down. On the 6th, the temperature was 101·4°, but the dog was getting weaker, and the owner consented to an exploratory laparotomy.

Operation was performed on this date. The dog weighed 47 lb., and nembutal 5¼ grs. was administered intravenously. He went rapidly under deep anæsthesia. On exploring the abdominal cavity, the first thing observed was a considerably enlarged spleen, without any pathological lesions discoverable other than apparent hyperplasia. The intestines and kidneys were examined, with negative results. The stomach was next examined and an indurated mass about the size of a hen's egg was discovered. This was brought into the operation field, and was found to be an enormously thickened pyloric end of the stomach, involving about two-thirds of its circumference. A tentative diagnosis of malignant growth was made, and as it was regarded as being inoperable, and the owner's consent for destruction having been previously obtained if we considered that course desirable, the dog was despatched with an intrathoracic injection of HCN.

On *post-mortem* examination, the indurated mass was found to be about two inches long, and about one-and-a-half inches in diameter. On cutting into it, a depression, circular in outline, about one inch in diameter, was observed, with a raised ring about one-eighth inch high. The finger could be passed from the stomach through the pylorus into the duodenum. This fact would account for the intermission in vomition, as there was no marked reduction in the lumen of the pylorus. Two secondary tumours were found in adjacent omentum, one about the side of a hazelnut, and the second about the size of a horse bean.

Histological examination carried out subsequent to the presentation of the case, revealed the tumours to be adeno-carcinomata.

SARCOMA OF INTESTINE OF DOG —RESECTION—RECURRENCE

G. H. WOOLDRIDGE, F.R.C.V.S., M.R.I.A.

and

J. W. H. HOLMES, M.R.C.V.S., D.V.S.M.

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The animal from which these morbid speciments (*vide infra*) were taken was a male, six-year-old mongrel dog of the Shetland collie type, which first came under observation at the end of August last. The history was that during the previous ten days there had been rapid wasting, poor appetite, looseness of the bowels, and occasional vomiting.

The dog was bright, but in very poor bodily condition. The mucous membranes were very pallid, but nothing further of a positive nature was discovered on examination at this stage. The animal was detained in the Infirmary under observation for a week, during which period feeding was good. There was no vomiting, and only slight laxness of the bowels was observed. Several urine analyses were made with negative results.

The patient was re-examined at frequent intervals subsequently, and he was again detained for a further period of a week in the middle of September. X-ray examination of the abdomen gave no information, and nothing of a positive nature was discovered until the beginning of October, when wasting was more pronounced, and abdominal palpation revealed an abnormal body, the size of a walnut, firm in consistency and freely movable. It was difficult to form an opinion of the organ affected—ileo-cæcal lymph gland, and lower end of the spleen were considered as likely sites, and the nature of the condition was thought to be tumour formation, or possibly tuberculous. The dog was still very cheerful, and on this account the owner decided to let him go on until symptoms became sufficiently acute to warrant destruction. Simple nursing and nutritive diet was the only treatment adopted. The dog was again seen the first week in November, when it was very weak and emaciated, and frequently vomiting. Abdominal palpation confirmed the previous findings, the abnormality being little changed in size. Permission was obtained to carry out an exploratory operation, and to destroy if hopeless.

The patient weighed 20 lb., and was given 3 grs. nembutal intravenously. Laparotomy revealed a tumour in the wall of the small intestine. A careful search was made for secondaries, and as none was discovered it was felt worth while proceeding with the operation.

The tumour and adjacent portions of bowel (about 4 in. in all) were removed, and lateral anastomosis of the cut ends carried out. During the days succeeding the operation, glucose saline

was frequently administered subcutaneously. The animal remained surprisingly bright, and fed on the liquid food offered. Six days after operation there was a relapse, as the result of a large abscess on the right side of the neck, a site where large quantities of saline had been injected. This was opened, and subsequent progress was very good. Microscopic examination by Mr. Orr revealed the tumour to be lympho-sarcoma. On December 1st, three weeks after operation, the animal was discharged. He was brought up for re-examination after an interval of a fortnight, and was then in very good condition, weighing 27 lb. The owner reported that he was feeding well, and was fit in every way. However, when examined early in January, he had fallen away considerably in condition, and a mass, the size of a tangerine orange, could be felt in the abdomen. A second tumour was suspected. The dog was still very cheerful, and, in view of this, the owner was advised to let him go on until signs of obvious suffering became evident. The animal was finally destroyed on January 26th.

A *post-mortem* was made, and revealed a large tumour formation four inches in diameter, involving the cæcum and the large and small intestine, as a tangled mass. A secondary growth the size of a pigeon's egg was found outside the duodenum, eight inches from the pylorus, and a further tumour the size of a split hen's egg was found in a pre-sternal lymph gland. No further macroscopic lesions were discovered. Mr. Orr examined sections of the secondary growths and reported the condition to be lympho-sarcoma.

The first specimen [exhibited] is the original growth in the bowel wall, the second is the anastomosed portion of bowel, which has been dissected out of the tumour mass, and the remaining specimen is the large secondary abdominal tumour.

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RENAL CALCULI IN A LABRADOR*

M. L. DARTNALL, M.R.C.V.S.
CHELTENHAM

Subject.—An eight-year-old black Labrador retriever bitch.

History.—The dog had been to a shooting party and worked well. The following day she appeared listless but not sufficiently ill to necessitate the calling in of advice. On the second day, however, frequent vomition began with refusal of food and as there was no improvement on the third morning I was called to see the bitch.

Examination.—The animal was in a state of collapse; the extremities and lips were cold, the mucous membranes were pale, and the pulse weak.

Diagnosis.—Guarded, the bitch being inclined to pick up and eat rubbish—this habit was thought of as a possibility of her having obtained some foreign matter.

Treatment.—Warmth and stimulants were ordered but the animal died in a few hours.

Post-mortem Examination.—Both kidneys contained a large calculus, leaving no medulla.

Remarks.—An interesting feature of the above case is that the animal had never shown any signs of ill-health in any way: this has been carefully verified since the *post-mortem*. The bitch was always ready for work and showed no difficulty in jumping, etc.; in fact, the owner was pleased with her general bodily condition.

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A PUZZLING "FOREIGN BODY" CASE IN THE DOG

J. D. WILLIAMS, M.R.C.V.S.
TWICKENHAM

SEPTEMBER 1ST, 1934: *Subject.*—Seven-year-old mongrel bitch, very fat.

History.—Inappetence; supposed to have swallowed a foreign body, August 30th, 1934. Recurrent swallowing efforts and occasional vomiting. Solid food vomited a few minutes after swallowing.

SEPTEMBER 4TH, 1934.—Received for examination, probang passed and it was thought that an obstruction was felt.

SEPTEMBER 5TH, 1934.—Animal X-rayed: two plates—one showing the presence of a foreign body in the stomach; the other, taken after barium meal, obliterating the foreign body.

SEPTEMBER 6TH, 1934.—Dog appeared brighter.

SEPTEMBER 8TH, 1934.—Patient very dull and listless. Gastrotomy was decided upon as it was thought that the foreign body had been pushed down into the stomach by the probang. The operation was carried out under nembutal anæsthesia (intraperitoneal), no further anæsthetic being required, and a stone, approximately 1 $\frac{3}{16}$ in. by $\frac{7}{8}$ in. by $\frac{1}{2}$ in. was removed from the stomach.

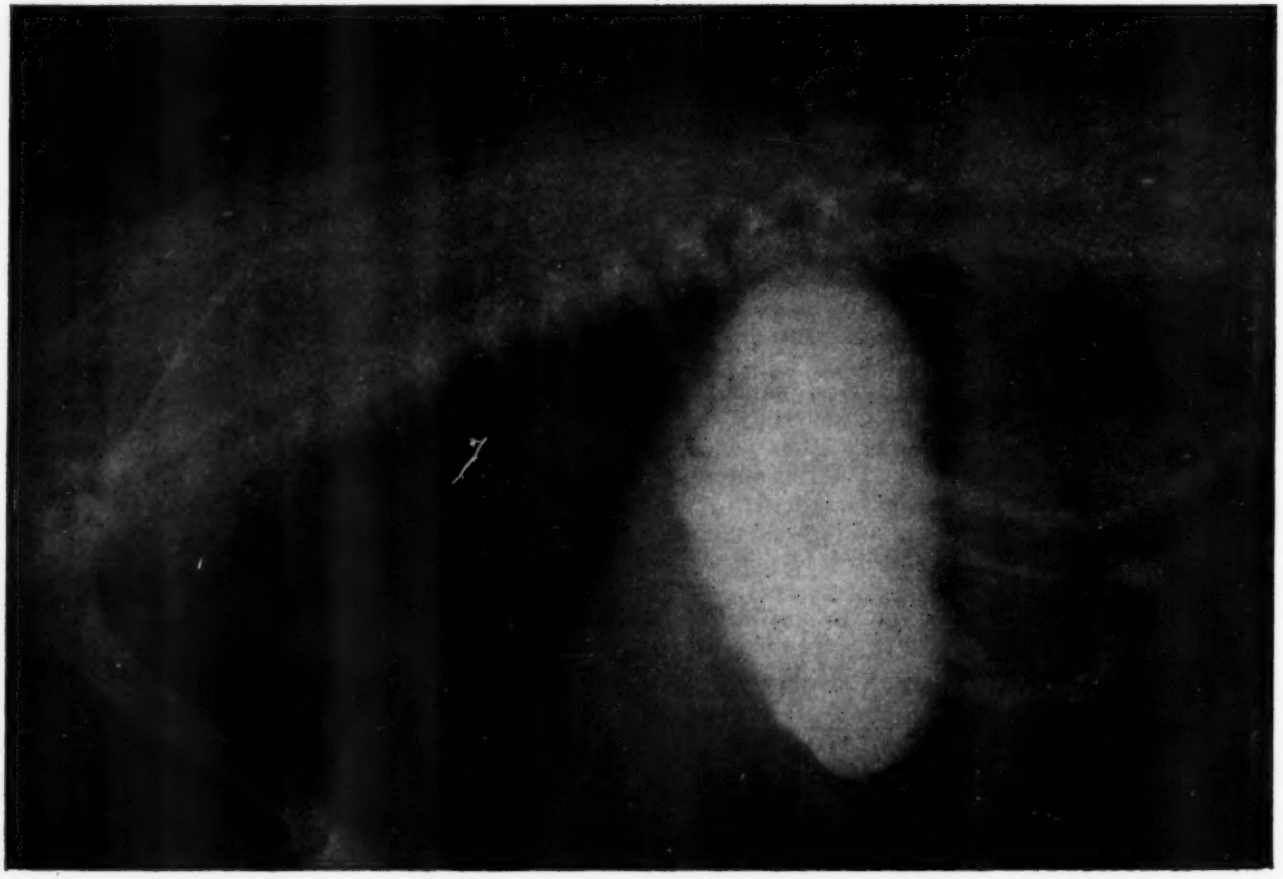
SEPTEMBER 10TH, 1934.—Dog taken home. The animal still refused to eat food, but vomiting had ceased.

SEPTEMBER 12TH, 1934.—A piece of bone (sacrum of sheep (?) and measuring 1$\frac{1}{2}$ in. by 1$\frac{1}{4}$ in.) was vomited twelve days after exhibition of original symptoms. The bone was fœtid and stinking. The dog began to eat voluntarily some hours later, and when last seen on September 17th, was eating well and full of life.

Remarks.—As previously stated, it was thought that the foreign body had been pushed into the stomach by the probang and from the X-ray showing a foreign body in the stomach the possibility of there also being a thoracic

* Case related, on Mr. Dartnall's behalf, by Miss K. W. Shedlock, M.R.C.V.S.

ILLUSTRATING MR. WILLIAMS' CASE



œsophageal obstruction was overlooked. Although the bone can be faintly seen in the X-ray plates it was mistaken for the bifurcation of the trachea.

A sequel to the case was the formation of a large ventral hernia at the site of operation. This was due to fat and omentum getting between the muscular layers although the wound healed by primary union. I found it very difficult indeed to deal with the fat at the time and kept it in the abdomen. However, a further operation was carried out and the hernia successfully removed.

Abstracts

[Comparative Aspects of Louping-ill in Sheep and Poliomyelitis in Man. Gordon, W. S. (1934.) *Brit. Med. J. 1.* 885-888.]

This is a paper read by Gordon at a meeting of the Comparative Medicine Section of the Royal Society of Medicine and already published in the *Proceedings* of that Society. (Vol. 27, pp. 11-17.)

A very good summary is given of the important researches that have been made on louping-ill at the Moredun Research Institute of the Animal Diseases Research Association, Gilmerton, Edinburgh; researches commenced by Pool, Brownlee and Wilson and continued by Gordon and his colleagues, Brownlee, Wilson and McLeod. The last named collaborated in the studies on the part played by the tick *Ixodes ricinus* in the transmission of the disease. In the course of these investigations another tick-borne infection of sheep clinically, pathologically, immunologically and ætiologically distinguishable from louping-ill was encountered. This disease, which is transmitted by the same tick, is believed to play no small part in the exacerbation of the symptoms produced by the louping-ill infection. Reference was also made to the interesting fact that evidence had been obtained that cattle are also susceptible to louping-ill virus infection and may develop the disease under natural conditions. The fact that mice can be readily infected with the virus, Alston and Gibson (1931), has been of considerable assistance in filtration and other studies. The susceptibility of the monkey, Hurst (1931), and the field vole, Findlay and Elton (1933), to infection with the virus has also been demonstrated.

Many natural cases of louping-ill in sheep are abortive; in some, transient symptoms, indicative of involvement of the central nervous system, are observed while in others again, only dulness accompanying the characteristic febrile reaction, may be detected. In these abortive cases the virus can be recovered from the blood at an early stage of the febrile reaction. Although the pathological changes in the disease are those of an encephalo-myelitis, sheep may die without any apparent lesions in the brain and spinal cord.

Gordon reviewed the literature on poliomyelitis infection (" infantile paralysis ") in man. He considered it possible that in cases of this disease, in which paralytic symptoms are not observed, the virus may, nevertheless, be present in the blood and that such cases bear some resemblance to the atypical or abortive cases of louping-ill in sheep. This argument would carry greater weight if it could be supported by experimental evidence.

I. A. G.

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[Louping-ill Virus as a Possible Cause of the " X-disease " Epidemic of 1917-18. Burnet, F. M. (1934.) *Med. J. Australia. 1.* 679.]

This note was published chiefly with the object of putting veterinary surgeons and medical men on the *qui vive* as to the occurrence of cases of encephalo-myelitis in animals or humans which might assist Burnet in his investigations as to the possible relationship between " X disease " in man and louping-ill in sheep.

The epidemic of human encephalitis in 1917-18 was caused by a virus the pathogenic action of which closely resembled that of louping-ill virus. The virus of this " X disease " in man Cleland and Campbell found to be pathogenic for monkeys, cattle and a proportion of sheep tested, but not so for rabbits, and mice were not employed. Louping-ill virus is similarly pathogenic for monkeys, cattle and sheep and non-pathogenic for rabbits. Mice and monkeys can be readily infected with the latter virus by intranasal instillation of virus, and laboratory infections in humans with louping-ill virus have also been described in which the method of introduction of virus may well have been by similar means. The symptoms produced in monkeys by both viruses appear to be very similar.

Louping-ill, however, has not so far been described as occurring among sheep or other animals in Australia.

The salient features of " X disease " in man which are referred to in part by Burnet may be substantiated by reference to the Annual Report of the Microbiological Laboratory of the Department of Public Health, Sydney, New South Wales, for 1917, and to a paper by Cleland and Campbell in the *Journal of Hygiene*, 1919-20. *18.* 272. The disease was geographically limited to certain areas in the far west of New South Wales and Southern Queensland and to the Broken Hill district, occurring almost simultaneously in " outback " regions between which

there was no normal communication except possibly *via* Sydney where only one doubtful case occurred. It was at first thought to be a form of poliomyelitis. It was an extremely fatal disease. Of 134 cases 94 died. Individuals of all ages were affected, but the majority of cases were in children. The disease was limited to the late summer months of February and March in both years, 1917 and 1918.

The possibility of infection being derived from animals was considered by the investigators, but was discarded on account of the absence of any symptoms of disease in sheep or other animals in the districts involved.

Burnet, however, is of the opinion that the rather extraordinary distribution of cases in regard to locality and season seems to find a much more reasonable explanation if the human cases were infected from an animal reservoir of the virus than on Cleland's hypothesis of human carriers. Louping-ill, as is now known, can be transmitted by the *Ixodes ricinus* tick and under natural conditions is probably most commonly transmitted by this means. This tick does not occur in Australia and sheep ticks were not observed by Cleland and his co-workers. Therefore if louping-ill existed it was probably spread from sheep to sheep by some other agent or means. The contention is that louping-ill may well exist in animals without being detected if the mortality rate is not high and such conditions might obtain in the absence of a concomitant infection such as tick-borne fever which MacLeod and Gordon (*J. Comp. Path.*, 1932, *45*, 240), are strongly persuaded may have an important influence on the course of louping-ill infection. Further, cases of laboratory infection in humans with louping-ill virus accompanied by encephalitic symptoms have been described and in these, ticks were not implicated and the portal of entry of the virus was probably the nasal route. In these cases virus-neutralising antibodies could be demonstrated in the blood.

The working hypothesis established by the writer is that that louping-ill existed, and that it was spread by the nasal route or biting flies from sheep to sheep without inducing a high mortality due to encephalo-myelitis. One might then consider a possible spread of the virus to the human by biting or non-biting flies. In favour of flies being implicated are the following facts: the occurrence of " X disease " in the hot dry season of late summer, the greater incidence among children and the tendency of the disease to occur in unhygienic surroundings. Serum was recently obtained from a patient who had suffered from " X disease " 16 years ago and tested for neutralising properties against the virus of louping-ill by Galloway (London) and against the St. Louis encephalitis virus by Webster (New York) with negative results. These observations, however, are not considered to have any great significance, especially with regard to the problem under discussion, for although the serum from human patients who have shown symptoms of encephalitis following infection with louping-ill may show neutralising properties against this virus, it is not known whether these antibodies would persist for a period of many years without reinfection.

I. A. G.

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[Distribution of Virus of Louping-ill in Blood and Brain of Intranasally Infected Mice. Fite, G. L., and Webster, L. T. (1933-34.) *Proc. Soc. Exp. Biol. 31.* 695. (1 Table.)]

Mice given an intranasal instillation of louping-ill virus, after an incubation period of about six to seven days, develop encephalomyelitic symptoms and succumb on about the eighth to tenth day after injection with lesions in the central nervous system [Webster and Fite (1933) and Elford and Galloway (1933)].

In the present experiments mice were infected by intranasal instillation of virus. An examination was made of the virus content of the blood and brain of these mice. The infectivity of the blood was tested in two ways. In the first experiment mice were infected and bled twice daily from the tail until the terminal stages of the disease. One or two drops of blood were collected in 0·25 c.c. of 1 : 1,000 heparin in physiological saline and 0·03 c.c. of this was inoculated into each of two mice. In the second experiment 36 mice were inoculated and four were killed daily, the whole blood being withdrawn directly from the heart and a sample inoculated immediately into two mice. After the blood had been collected the brains of the mice were removed and also tested for virus content. The virus did not appear in the blood " in quantity " until the second day. From then until the sixth day, when the mice began to show symptoms, the virus was usually demonstrable in the blood. After the sixth day the virus appeared to be absent from the blood. The brains of the mice sometimes contained virus as early as the first day but in 50 per cent. of cases not until the third day; after the third day the virus was invariably present in large amounts.

In a later experiment, a histological study was made of the brains of intranasally infected mice at all stages of the disease, four mice being killed early after infection until the final stages. Definite lesions were not observed until about the time when symptoms began to appear.

The general conclusions are, that louping-ill virus introduced into the nasal passage of mice gains access to the blood and brain and is demonstrable in both by the second day. It persists in the blood until lesions develop in the C.N.S. and the animal shows symptoms, after which " it tends to disappear " (reference to the data

submitted in the Table would suggest that virus is present in the blood throughout the infection, although in less amount after the symptoms appear). Virus can be detected in the brain at least four days before the animal shows symptoms and multiplies there until the animal dies from encephalo-myelitis.

I. A. G.

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[**Lamb Dysentery in North Wales.** Montgomerie, R. F., and Rowlands, W. T. (1934.) *Vet. J. 90.* 8. p. 323.]

A brief account of the history of this disease in North Wales is given, and reference is made to Dalling's experimental reproduction of lamb dysentery in 1926. Further, in the continued successful general application of prophylactics prepared from the lamb dysentery bacillus, this micro-organism came to be accepted as the exciting cause of the disease, although evidence was lacking as to the precise manner of its action. The present work was undertaken to determine whether or not lamb dysentery is an enterotoxæmia, but was later diverted into a more general line. A toxic element was detected in each of the intestinal contents filtrates from 21 cases of lamb dysentery investigated, and this, coupled with Dalling's observation that the L.D. bacillus could rarely be recovered from sites other than the intestinal canal in cases killed whilst showing symptoms, suggests that the disease is an enterotoxæmia. The authors admit that further work will be necessary before the exact nature of lamb dysentery is determined.

Of particular interest are the results obtained from the examination of 16 cases of dysentery during the 1933 lambing season. A toxic filtrate was obtained from the intestinal contents in each case. These filtrates were then mixed with an equal volume of certain antisera and submitted to animal tests, when it was found that whereas one lamb dysentery bacillus antiserum neutralised the toxic element in every case tested, two other L.D. antisera of more recent manufacture failed to do so in 14 out of the 15 filtrates examined. *B. ovitoxicus* (Wilsdon type D) antiserum neutralised these filtrates, providing evidence that the toxic element from these cases was mainly of the type produced by *B. ovitoxicus,* and that there was a material difference in these three samples of L.D. antiserum. Attention is drawn to the fact that these findings might not be representative, since the cases of dysentery were selected from flocks with an atypical history, or where serum inoculation had failed to effect control of the naturally occurring disease.

To check the type of toxic element produced, multiple cultures were obtained from eight of the above cases. Neutralisation experiments showed that the toxin of the L.D. bacillus contained two chief toxic fractions. One is neutralised by *B. pâludis* antitoxin, present in high concentration during the early period of incubation, and which rapidly deteriorates. The other fraction is neutralised by *B. ovitoxicus* antiserum, present in low concentration during the early period of incubation, but increasing as incubation is prolonged and relatively stable.

A strain of long-isolated L.D. bacillus was examined and was found to produce no fraction of the ovitoxicus type of toxin at any period of its growth. A note is added by Dalling, who refers to the loss of power of this strain to produce ovitoxicus toxin, and states that this change must have occurred between 1923 and 1932. This is shown by an examination of samples of sera produced prior to 1932. The older samples contained ovitoxicus antitoxin, while the more recently prepared samples apparently do not.

W. L. S.

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[**Contagious Ecthyma (Sore Mouth) of Sheep and Goats.** Boughton, I. B., and Hardy, W. T. (1934.) *J. Amer. Vet. Med. Ass.* N.S. *38.* 2. p. 150.]

Contagious ecthyma (sore mouth) of sheep and goats is an infective disease of the variola-vaccinia group, but is quite distinct from sheep-pox. It is characterised by the formation of papules, vesicles, pustules and scabs on the skin of the lips, and appears to be identical with the disease described by Glover and known in Britain as contagious pustular dermatitis. In Texas with its four million sheep and two million goat population, the disease is of great economic importance and causes losses estimated at hundreds of thousands of dollars annually. The loss arises from shrinkage of weight in infected animals, and the condition is aggravated by the infestation of the swollen, inflamed lips by the larvæ of the screw-worm fly (*Cochliomyia macellaria*).

Using filtrates of emulsified scab material, the authors have demonstrated that the disease is caused by a virus. The virus contained in the scabs is very resistant and remained potent after fifteen months storage in brown glass bottles at 14°C. No indications of plurality of virus for the same species of animal were found. Contagious ecthyma virus retains its infectivity in spite of strong dilution with normal saline, and scab material diluted 1 : 100,000 transmitted the infection to a susceptible kid.

Medicinal treatment of affected lambs and kids is unsatisfactory, as medicaments fail to reach the virus which is located in the skin. Pine tar oil tends to soften the scabs, and to some extent prevents the blow fly depositing its eggs, but is of little avail under ranch conditions. In company with other investigators, the authors found that infection induced a durable immunity,

which has been demonstrated in large field experiments. During 1932, controlled field tests demonstrated that vaccination was a practical method of preventing the disease. Of 7,884 lambs vaccinated, 0·38 per cent. subsequently developed mild lip lesions, while of 10,173 untreated controls, 65·53 per cent. contracted the disease in a severe form. The vaccine was made from a sheep strain of virus, and after scarification of the skin of the flank with an instrument holding three sharp gramophone needles, a drop of vaccine was rubbed thoroughly into the scarified area with a stiff brush. Inspection of lambs two weeks later showed that the vaccine had taken, and scabs had developed at the vaccination site. It is not known definitely how long immunity lasts. Field work was continued in 1933, and as a result of more than a million and a quarter vaccinations the authors consider that vaccination against contagious ecthyma is practical, economical and dependable.

W. L. S.

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[Nairobi Sheep Disease: Natural and Experimental Transmission by Ticks other than ***Rhipicephalus appendiculatus.*** DAUBNEY, R., and HUDSON, J. R. (1934.) *Parasitology. 24.* 4. 496-509. (7 refs.)]

Nairobi sheep disease was shown by Montgomery in 1917 to be commonly transmitted by *R. appendiculatus* and this was confirmed 14 years later by Daubney and Hudson.

That the disease might be transmitted by ticks other than *R. appendiculatus* was suggested by several outbreaks in 1931 in sheep not infested with this species of tick.

In investigating the possibility that *R. simus* might act as a vector, the larvæ and nymphæ could not be induced to feed on sheep. Therefore, if this species was to be considered as a potential vector, it would be necessary to show that the virus could persist in the blood of a common host of the larvæ and nymphs. Field rats (*Arvicanthus*) were a common host, and were found to be susceptible and capable of harbouring the virus for up to four days after inoculation. Larvæ fed on infected *Arvicanthus*, and nymphs from these larvæ, failed to transmit the virus to sheep by inoculation. Nymphæ fed both as larvæ and nymphs on infective field rats were inoculated into a sheep and transmission occurred. It would appear, however, that infection in this species is lost during the moult.

In the case of *R. evertsi* adults were infected but larvæ from these adults did not transmit the disease. *R. pulchellus* did not appear capable of carrying the disease. With *R. bursa*, however, transmission was effected by one adult which was infected as a nymph. Attempts to confirm this failed and it is proposed to repeat the experiments.

It is shown that *Amblyomma variegatum* acts as a vector, though less efficiently than *R. appendiculatus*, and it is believed that transmission by this species would account for the peculiar features of the outbreaks in which *R. appendiculatus* was known to be absent. Infection does not appear to be carried through the egg.

The authors conclude that *R. simus* and *R. evertsi* can safely be excluded as vectors, but experiments with the other species tested have not been sufficiently exhaustive to permit a definite decision.

J. S. S.

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[Observations on the Sheep Tapeworm, ***Moniezia expansa*****, in California.** FREEBORN, S. B., and BERRY, L. J. (1934.) *J. Amer. Vet. Med. Ass. 38.* (N.S.) 5. 611-616. (5 refs.)]

Infestation of sheep with *Moniezia expansa* is almost universal in California though infestations are not usually heavy. Observations on the grading of infected and uninfected sheep indicated that there was some loss of condition due to even relatively slight infections. Contrary to observations by Seddon in Australia, re-infection of lambs that have recovered from *Moniezia* infestations appears to occur. It is suggested that the lighter infestations of Californian sheep produce a degree of immunity capable of preventing re-infestation for only a few months after the original infestation has been eliminated. With regard to treatment, the use of a combination of copper sulphate and nicotine sulphate appears to be specific, though neither of these drugs given separately is effective. The mixture used consisted of 1 per cent. (by weight) of copper sulphate and 1 per cent. (by volume) of nicotine sulphate (" black leaf 40 "). Lambs of three months take 2 oz. and full grown ewes 4 oz.

It is suggested that the copper forms a chemical combination with impurities in the " black leaf 40," as when pure nicotine was used with the copper in the same proportion as in the " black leaf 40 " mixture there was apparently no effect on the tapeworms and the mixture was decidedly toxic to the ewes.

For convenience of administration the drugs were tried in powder form in capsules, but this method of administration proved unsatisfactory.

J. S. S.

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[The Genus ***Salmonella*** **Lignières, 1900.** Issued by the Salmonella Sub-Committee of the International Society for Microbiology. *J. Hyg. Camb. 34.* 333-350. 1 table. (123 refs.).]

The name *Salmonella* was first used by Lignières in 1900 to describe a group of " hog-cholera "-like intestinal organisms, the type species being " le microbe du hog-cholera de Salmon." Since then the group has been studied and enlarged, and the organisms described either as members of a subgenus of Bacterium, or as

Salmonella. The Salmonella Sub-Committee is of the opinion that the generic name *Salmonella* has priority, and that the group should henceforth be known as *Salmonella* Lignières, 1900, *Salmonella choleræ-suis* Smith *comb. nov.* being the type species. The group includes the organisms conforming with the following description given by Bruce White in 1929: "a large genus of serologically related, Gram-negative and non-sporing bacilli; 0·4-0·6μ × 1-3μ in usual dimensions, but occasionally forming short filaments, showing, with certain exceptions, a motile peritrichous phase in which they normally occur; in fact, adhering to the pattern of *B. typhosus* in staining properties and morphology. Failing to ferment lactose and saccharose, to clot milk, to liquefy gelatin, or to produce indol, they regularly attack glucose with, but occasionally without, gas production. All the known species are pathogenic for man, animals, or both."

The recognised members of the genus are classified according to their antigenic structure, and in this respect the Committee has followed the Kauffmann-White Schema, and the order and antigenic structure system of Kauffmann, the O-antigen being shown by Roman numerals, the specific H-antigen in small letters, and the non-specific H-antigen in Arabic numerals. Thus *Salmonella choleræ-suis* has the following antigenic structure: VI and VII (O antigens); C (specific H); 1, 3, 4, 5 (non-specific H.).

One member of the Sub-Committee, Dr. E. O. Jordan, considers that certain of the dysentery bacilli, so nearly related to *B. typhosus*, should not be excluded from a group with such a broad classification.

The Committee points out that antigens similar to the O antigens of the Salmonella organisms may occur in other genera, but bacteria containing such antigens are easily differentiated on morphological, cultural, and pathogenic grounds.

A list of the recognised species, their antigenic structure, source, and synonyms is given; thus *Bacillus ærtrycke* is now to be known as *S. typhimurium; Bacillus abortivo-equinus* as *S. abortus equi; Bacterium abortus ovis* as *S. abortus ovis; B. suipestifer* as *S. choleræ-suis,* the European type being called *S. choleræ-suis* var. *kunzendorf; B. enteritidis Gärtner* as *S. enteritidis;* the Dublin type as *S. enteritidis* var. *dublin; B. gallinarum* or *B. sanguinarum* as *S. gallinarum; B. pullorum* as *S. pullorum;* and *B. anatum* as *S. anatum.* N. H. H.

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[Studies on Coccidiosis. VIII.—Immunity or Resistance to Infection of Chickens. Mayhew, R. L. (1934.) *J. Amer. Vet. Med. Ass.* *85.* 6.]

Experiments were made with progeny of eight hens to study the immunity to coccidiosis in the various "families" and to consider the practicability of obtaining an immunity by repeated infection.

Three generations of four "families" showed a marked difference in the percentage of hæmorrhage and death following infection and it is suggested that it might be possible to eliminate the highly susceptible "families" by special mating. Considerable variation in the results in the different generations occurred and is attributed to the small numbers involved.

Four "families" subjected to repeated infection at various intervals gave no standard reaction. In some instances infection was followed by hæmorrhage; in others by hæmorrhage and death. The author considers that the development of an immunity by repeated infection offers little promise as a practical means of protecting chickens from the disease.

From observations made on chickens aged 21 and 25 weeks suffering from coccidiosis, the author considers that an age immunity or resistance is not acquired. D. W. M.

Report

IMPERIAL INSTITUTE OF VETERINARY RESEARCH, MUKTESAR

REPORT FOR THE YEAR ENDING MARCH 31st, 1934

The report is divided into seven sections:—

A.—Report of the Director.
B.—Report of the Serology Section.
C.—Report of the Pathology Section.
D.—Report of the Protozoology Section.
E.—Report of the Deputy Director, Imperial Veterinary Serum Institute, Izatnagar.
F.—Appendices.

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SECTION A: REPORT OF THE DIRECTOR

In the absence of Mr. F. Ware on leave, Mr. W. Taylor, M.R.C.V.S., D.V.H., Principal, Punjab Veterinary College, officiated as Director. A great loss was sustained in the regrettable death of Mr. H. Cooper, Veterinary Research Officer in charge of Pathology, while on sick leave in England. By his death the Government of India has lost a loyal, sound, and efficient officer, and one whose services it will be difficult to replace.

Commenting under "Supplies and Services at Muktesar":—

(a) *Veterinary Section.*—The total number of each species of animal purchased during the year was 1,114 hill bulls, 273 goats, 32 sheep and six ponies. Of these, 50 hill bulls, 42 goats,

five sheep and two foals died prior to being subjected to any experiment, while among the experimental animals 467 hill bulls, six cows and heifer calves, eleven buffaloes, 28 sheep, 250 goats, seven horses and ponies died during the year. The amounts realised by public auction for discontinued hill bulls and goats were Rs. 1,891 and Rs. 7 respectively.

Eighty-five consignments of bull virus and 149 consignments of goat virus were despatched to the various parts of India for serum-simultaneous and goat virus alone inoculations during the year. The bull virus consignments included those despatched to the Imperial Veterinary Serum Institute, Izatnagar, for serum production.

(b) *Estate Section.*—The area under cultivation at Muktesar is now 279½ acres, supplying the Institute with 1,415 mds. of fodder. In addition, 7,069 mds. of green grass, and 12,592 mds. of hay were purchased through contractors. 8,074 mds. of grain were also supplied by contractors. The produce of the Reserved Forest consisted of 12,441 mds. of firewood, 1,993 mds. of charcoal, 4,913 mds. of hay, 3,846 mds. of green fodder, 2,897 mds. of pine needles, 24 bundles of ringals and 642 posts.

The average number of animals in the dairy herd was 29, of which the number of milch cows was 11·5. The average daily milk yield per cow rose from 14·6 lb. to 20·28 lb. during the year. During the same period the dairy herd produced 83,802·5 lb. of milk, which was supplemented by 3,536 lb. of buffalo milk for butter making.

(c) *Engineering Section.*—The satisfactory rainfall had a marked effect on the quantity of water pumped, and in turn affected considerably the amount of electricity generated. Installation of electricity was undertaken in the various bungalows and laboratories.

(d) *Medical and Sanitary Section.*—The number of patients treated at the Dispensary during the year was 4,183 out-patients and 70 in-patients. The general health of the station was good, no epidemic or infectious disease occurring.

(e) *Construction and Repairs.*—No major works were constructed during the year, the main items of expense being conversion of quarters for European officers, and electrification of buildings.

(f) *Apparatus and Appliances.*—The allotment under the head " Chemicals and Apparatus " was Rs. 11,000, and that for English Stores, including the requirements for the Production Section, was Rs. 19,000.

(g) *Library.*—The total number of text books added to the Library during the year was 117. There is a growing demand from veterinary officers working in the Provinces for books and publications on loan.

(*h*) The total number of healthy small animals used in experiments amounted to 347 rabbits, 433 guinea-pigs, 74 dogs, 106 fowls, 18 pigeons, 111 mice, and eight cats.

Under the heading of " Production," although the demand for anti-rinderpest serum, the major product of the Institute, decreased by over 3 lacs in comparison with last year, the demand for all products of the Institute increased by more than half a lac. The cost of producing anti-rinderpest serum has been reduced, but the cost of anti-hæmorrhagic septicæmia serum has been increased, the reason being that animals that are used for the latter serum are afterwards used for the former. It is intended that, when the installation of a cold storage plant has been accomplished, all products including those now made at Muktesar, will be manufactured at Izatnagar on account of the improved technical methods of production now existing at that place.

Under the heading of " Research," during the year official sanction has been accorded to the organisation of the three research branches, *viz.*, Serology, Pathology, and Protozoology, and their activities are remarked on under the respective sections.

SECTION B: REPORT OF THE SEROLOGY SECTION

(*Mr. J. R. Haddow*, B.Sc., M.R.C.V.S., D.V.S.M.: *Veterinary Officer in Charge of Serology.*)

I. Rinderpest:—

(1) *Duration of immunity following goat virus inoculation*:—

In continuation of the work reported last year, a further batch of 26 calves, ranging from one to 13½ months of age, was immunised with goat virus alone. This series was, on the average, younger than the previous one and the reactions were much less severe than the previous year. Whereas last year 24 out of the 37 animals inoculated showed definite symptoms of rinderpest or were proved to have a blood infection by sub-inoculation into susceptible bulls, only 14 out of the number inoculated during the current year could be placed in that class. In no case were any alarming symptoms observed. The use of goat virus-alone inoculations of young stock as a preventive measure has been still further extended in military and other dairies, with, as far as is known, entirely satisfactory results. In those cases in which reactions of alarming severity were noted, control was readily obtained by the administration of serum. Goat virus inoculations of adult cattle as a preventive measure have been greatly extended in the provinces during the past year, this extension being greatly assisted by the Special Disease Investigation Officers provided by the Imperial Council of Agricultural Research. The mortality following on such inocu-

lations, so far reported, has been negligible. The method has also been tried out in Bengal, in face of actual outbreaks, and from the reported success in the control and rapid elimination of these outbreaks, the indication is that the method might be usefully extended to those areas in which the cattle are known to be relatively insusceptible.

(2) *Viability of virus outside the animal body.*—With storage at ordinary temperatures at Muktesar, spleen tissue and watery extracts of spleen tissues have given most success, remaining virulent for about a month. Testicle and testicular extracts remained virulent for about 21 days. A few experiments to test the relative virulence of various tissues were carried out. Spleen proved to be the most virulent, followed by testicle, blood, brain, vitreous humour and aqueous humour, in the above order. Watery extracts of spleen and testicle were found to be much less powerful than the tissues from which they were derived, while any form of storage produced an appreciable loss in virulence, which loss increased rapidly as the period of storage was prolonged.

(3) *Dosage of serum and virus.*—With a view to obtaining an explanation of the possible cause of the early break-down of immunity in animals believed to be fully protected, it was found that, using the intravenous route, many times (at least 100) the minimal infective dose could be given to highly susceptible hill bulls and, if accompanied by large doses of a very potent serum, without resultant infection, the animal remained as susceptible as before. When the dose of virus was increased, the results indicated that the subsequent susceptibility was also reduced by the establishment of graded degrees of immunity.

(4) *Serum making.*—Work in this connection was carried out at Izatnagar, and with a view to effecting a reduction in the number of susceptible buffalo serum-makers available, the question of hyper-immunisation was examined, using spleen and testicle pulp as the virus medium instead of blood as in former years. Serum of sufficient potency for use in the active immunisation of Indian breeds of cattle was obtained after each of two hyper-immunisations given at an interval of $3\frac{1}{2}$ to $4\frac{1}{2}$ months after the original immunisation.

II. Anthrax.—Experiments on anthrax were limited this year to the examination of the possibility of using formalinised tissues from animals dead of anthrax as a vaccine. Immunity following on the inoculation of such material was absent or of a very low degree.

III. Blackquarter.—The introduction of a formalinised culture vaccine in replacement of issues of blackquarter "natural" aggressin has resulted in a large economy in the material and time taken for manufacture and has eliminated the destruction of the large number of bulls required for this purpose.

IV. Hæmorrhagic Septicæmia.—Reports on vaccination carried out on young stock at the Government Cattle Farm, Dacca, indicate that the vaccine was successful in eliminating the disease. Widespread outbreaks resembling this condition in sheep have from time to time been reported, and in one case the administration of an antiserum of a bovine strain appeared to be beneficial. A similar condition in cats was investigated in Calcutta.

V. Contagious Abortion.—Agglutination tests and cultural examination of material submitted by the Military and Civil Veterinary Departments were carried out.

VI. Bovine Lymphangitis.—Examination from the Government Dairy Farm, Rangpur, Bengal, was continued, and in one case *B. pseudotuberculosis rodentium* was isolated.

VII. Amaurosis in Calves.—Information collected indicates that the disease occurs most frequently where a nutritional defect in vitamins or minerals is present in association with a high productive rate of both milk and offspring. Cows which have had intermittent periods of sterility, which in themselves may be due to this condition, do not produce blind calves. Note is made that night blindness, which is reported to disappear on feeding fresh green fodder, is prevalent in areas in which calves are affected with amaurosis.

VIII. Osteoporosis in Cattle.—Reports were received of the existence of this disease in a village in the Hyderabad State. Examination of fodder proved that the phosphorus content was significantly low, and that the lime content was below the average. Portions of bone submitted for inspection and analysis were also typical of this condition.

IX. Ephemeral Fever (Three-day Sickness).—Though rare in the hills, this disease is of frequent occurrence in certain parts of India, notably in the Punjab. It was found that the disease could be readily transmitted by subcutaneous or intravenous injection of blood or cerebro-spinal fluid but susceptible animals kept in close contact with active cases from six days to six weeks failed to contract the disease.

X. Other Bovine Diseases.—The annual test of the Muktesar dairy herd with tuberculin was carried out. No case of tuberculosis was detected, but one suspicious reaction to avian tuberculin was noted.

XI. Equine Contagious Abortion.—Vaccination of the stud owned by Colonel E. H. Cole has been continued with apparently excellent results, and vaccination has been taken up in the stud owned by Major D. Vanrenen at Renala, Measures for prevention of this disease in Probynabad Stud are under consideration.

XII. Strangles.—In collaboration with the Army Veterinary Authorities in India, the question of the control of strangles in the Remount Depôts and Studs was again taken up for study. It was found that sporadic cases did not usually yield streptococci on culture, but that staphylococci were more often implicated in these cases. An infection due to this type of organism appears to be endemic in Saharanpur Depôt, which is composed entirely of Australian-bred animals.

XIII. Aphosphorosis in Horses.—Investigation was commenced with a view to detecting the possible presence of this condition in the young stock in remount depôts, and its relationship with "lack of bone" in the young remounts. The technique of Fishe and Subbarrow for the estimation of phosphorus in whole blood was adopted. Duplicate analyses were carried out at Sargodha with the assistance of Major Andrews, and at Muktesar by Dr. K. C. Sen.

XIV. "Kumri" and Paraplegia in Horses.—From data on the mineral analysis of blood and food-stuffs relevant to the occurrence of these diseases, it appeared possible that a nutritional factor might be implicated and a feeding experiment was instituted.

XV. Animal Nutrition.—The feeding experiment in the Muktesar dairy herd described in previous reports was continued, the present position being that the average milk production of the mineral-fed group has risen considerably. Five cases of Johne's disease occurred in the control or non-mineral-fed group.

XVI. Disease in Chickens.—Great difficulty was again experienced in hatching and raising chickens from locally bred fowls.

XVII. Doyle's Disease (Avian Distemper).—Work on vaccination was held up owing to the occurrence of outbreaks of the natural disease.

XVIII. Miscellaneous.—One hundred and three samples of anti-rinderpest serum were tested on animals during the year. Of these, 39 were routine tests of sera manufactured at Izatnagar for issue to the field, 63 were experimental samples, and one was received from the field. A considerable amount of routine work was carried out both in the Bacteriological and Biochemical laboratories with reference to the testing and standardisation of the products issued from the laboratory.

[Note.—Extracts from the Reports of the Pathology Section, the Protozoology Section, and the Imperial Veterinary Serum Institute, Izatnagar, will appear in a subsequent issue of *The Veterinary Record.*] J. M.

The first licence under the Ministry of Agriculture's attested-herds scheme has been granted to Mr. E. Aron, of Hunton Bridge, King's Langley, Herts. This herd of Jerseys numbers 36 and is self-contained. On March 1st it was stated that the Ministry of Agriculture has received applications, accompanied by satisfactory veterinary certificates, from 27 herd owners.

N.V.M.A. Divisional Reports

CENTRAL VETERINARY SOCIETY

When this Society met at the Conway Hall, Red Lion Square, W.C.1, on Thursday, February 7th, 1935, the cat, or rather the diseases of that animal, achieved possibly for the first time, other than at one session of Congress, N.V.M.A., the significant distinction of occupying the attention of a large gathering of veterinarians for the greater part of a meeting, under the able leadership of Major Dalling and Dr. Hindle.

Others present were: Capt. L. S. Balls (President), in the Chair; Mr. J. H. L. Addis, Capt. A. H. Andrew, Messrs. S. E. B. Balfour-Jones, S. Bennett, W. Brown, Capt. R. E. C. Bullen, Major T. Dalling, Mr. W. Davies, Major W. Denington, Mr. A. C. Dixon, Major G. W. Dunkin, Mr. H. E. Bywater (Hon. Secretary), Miss C. M. Ford, Mr. S. Gourley, Mr. H. W. Griffiths, Sir Frederick Hobday, Mr. J. W. H. Holmes, Capt. P. S Howard, Mr. A. J. James, Miss M. G. Jordan, Mr. N. S. King, Major H. Kirk, Miss B. L. Lock, Dr. J. McCunn, Capt. J. F. Macdonald, Mr. J. W. McIntosh, Mr. R. Machin, Lt.-Col. W. S. Mulvey, Miss M. Oyler, Mr. W. Perryman, Mr. C. R. A. Powell, Miss K. W. Shedlock, Dr. A. W. Stableforth, Mr. J. Stewart, Capt. R. J. Stow, Capt. W. G. Taylor, Mr. J. D. Williams, Mr. C. R. Wood, Professor G. H. Wooldridge and Dr. W. R. Wooldridge. The following were present as visitors: Miss G. Askew, Messrs. D. H. Craddock, F. A. Crowhurst, N. Glynn, H. W. Greener, J. Hickman, Dr. E. Hindle, Messrs. W. L. Hughes, W. J. McGubbin, G. Saunders, N. J. Scorgie, H. E. Smithers, N. R. Turnbull, C. R. Turbet, P. Wade, A. L. Walters and Miss Olga Uvarov.

The minutes of the January meeting of the Society having been published in *The Veterinary Record*, were taken as read and were approved and signed.

Correspondence.—(1) From Mr. G. S. Peyton and Mr. G. P. Male, apologising for their inability to attend the meeting.

(2) From the N.V.M.A., with reference to the arrangement of schemes, in conjunction with the R.S.P.C.A., for the provision of free veterinary treatment of sick and injured animals of persons unable to pay professional fees.

The meeting considered the communication "in Committee."

(3) From the N.V.M.A., inviting the Society, as a Division of the Association, to submit its views as to the desirability of the Council of the Association, in agreement with the Divisions, considering the proposal that a composite subscription should be instituted to cover membership of the N.V.M.A. and of its Divisions.

Major H. Kirk, speaking to this communication, said that he would like the meeting that night, if possible, to agree to the proposal in principle, although no scheme had yet been worked out, because it seemed to him a ridiculous situation that the N.V.M.A. should purport to represent all the members of the Divisions, when some were members of the Association and some were not. If there were a composite fee, they would all come in.

Professor G. H. Wooldridge observed that this was a very much bigger proposition than Major Kirk seemed, by his remarks, to envisage, particularly when it was realised that some of the Divisions had different subscriptions from others. He would propose, therefore, that the matter be referred to the Council of the Society for consideration and report.

Capt. R. E. C. Bullen seconded and the proposition was carried.

(4) From the N.V.M.A., requesting to be informed of the name of the delegate appointed to represent the Society at the Annual Congress of the Royal Sanitary Institute.

(5) From the Royal Sanitary Institute, inviting the Society to appoint a delegate or delegates to the 46th Annual Congress of the Institute, to be held at Bournemouth, from July 15th to 20th, 1935.

On the proposition of Major Dalling, seconded by Professor Wooldridge, it was agreed that a delegate be sent, and that Mr. H. E. Bywater (the Society's Hon. Secretary) be re-appointed in that capacity.

(6) From the National Horse Association of Great Britain, forwarding a copy of Part 3 of the Horse Owners' Guide (dealing with the commercial horse), and stating that the Horse Owners' Reference Book would be issued during the month, also soliciting the renewal of the Society's subscription (£5 5s. 0d.) for the current year.

The question of a renewal of the subscription was referred to the Council.

Report of Representative to the National Horse Association

Mr. W. Perryman presented the following report :—

The work of the National Horse Association during the past year has been one of great activity, and has been most encouraging and advantageous to horse owners, farmers and I can safely say to the public generally. Not only have animals generally been considered but anything that appertains to the rights and privileges of the public—such as the use and condition of roads, commons, bridle-paths and the laying out of new arterial roads, and all new Parliamentary (Municipal) Bills—are closely scrutinised by the Parliamentary Agent and amendments suggested if necessary. The work done by the Council, as you are aware, is quite voluntary, except for that of the Secretary and the Parliamentary Agent.

The Association is now the most influential body of its kind in the world, and is composed of men of practically all the breed societies in the United Kingdom, and it is gratifying to note that advice has been sought not only from Government and Public Bodies, but that several countries have sought information from the National Horse Association and look upon it as the leading authority from whom they can obtain reliable information regarding pedigree stock. The Press generally now quote the Association as the authority on such matters.

You will have seen, no doubt, from time to time in *The Veterinary Record*, reports of the Society's meetings, and of some of the work done, therefore, it is unnecessary for me to recapitulate in detail.

Close attention has been paid to light horses and every encouragement given to foster their use for riding purposes. In connection with this branch of the use of the horse, I think we have every reason to be optimistic.

Undoubtedly the hack has become very popular—riding schools and clubs have increased to a very large extent in all parts of the country, and the National Horse Association is giving them every help and encouragement. Many establishments are desirous of affiliation, but before acceptance, and the issue of the Association's badge, an independent inspection and satisfactory report must be made. This, I think, is as it should be, preventing, as it does, undesirable establishments making use of the Horse Association—it is protective to the riders. The Secretary reported at the December meeting that 240 riding schools had lodged details of their establishments, so that their names could be included in the Horse Owners' Reference Book for 1935. A standard badge for clubs and riders has been approved.

I should like to say here that our President, in his Presidential address, laid stress upon the encouragement of riding schools. When you come to think of 240 independent riding schools, each having a number of horses, which have come into use during the last few years that represents a very material increase in horse usage.

The commercial horse is well represented by members of the various breed societies.

The President-elect for the coming year (1935-6), is Mr. James Forshaw, the well-known Shire-horse breeder.

The question of import duties on horses received careful attention, while grass verges, bridle paths, commons and the laying out of new open spaces have all occupied a great deal of the time of the Council. The result has been the securing of valuable concessions to the benefit of the horse-owner or rider.

The Society are issuing valuable and instructive literature in the form of the Horse Owners'

Reference Book and the Horse Owners' Guide. The former is a book full of general interest, and should be obtained by every veterinary surgeon. The new issue is now due (February) and is very up-to-date.

The Horse Owners' Guide (Part 3) contains articles by surgeons and breeders, several of which were published in *The Veterinary Record*.

I am glad to say the veterinary profession is now well represented; a great many practitioners are members, and I believe there are no fewer than 18 colleges and veterinary societies affiliated. It is to the advantage of the profession that all should endeavour to do their utmost to foster and encourage the horse industry and make provision for the safety and welfare of the valuable stock of this country, and at the same time to encourage our farmers and breeders to produce the pedigree stock we are all so proud of in this country.

My summary of the National Horse Association is that it is a very live body.

The President said that he desired, from the Chair, to propose a vote of thanks to Mr. Perryman for the excellent work he had done as one of the Society's representatives on the National Horse Association and, further, for the very excellent report he had given them that evening.

The vote of thanks was accorded with applause.

Obituary.—The President now observed that he regretted to announce that one of their members, Mr. W. R. Davis, late of Enfield, had passed away since their last meeting. Mr. Davis was a practitioner of the old school, one who was held in the highest esteem and who was a frequent and valued contributor to *The Veterinary Record*, and he would ask the Fellows to stand in tribute to his memory.

Morbid Specimens and Cases of Interest.

To this feature of the proceedings the following contributions were made, all being reported in detail in the Clinical Section of this issue of *The Veterinary Record*: (1) *By Professor, G. H. Wooldridge and Mr. J. W .H. Holmes.* (*a*) Tumour of the pyloric portion of the stomach in a dog; (*b*) Sarcoma of intestine of dog—resection—recurrence. (2) *By Mr. J. D. Williams*—A puzzling "foreign body" case in the dog. (3) *By Miss K. W. Shedlock* (on behalf of Mr. M. L. Dartnall)—Renal calculi in a Labrador.

Paper.—The President now called upon Major T. Dalling to present his paper entitled, "Distemper in the Cat." Major Dalling was heard with much interest, as also was Dr. Hindle, who followed and opened a well-sustained discussion. [Major Dalling's paper is reproduced, together with a report of the discussion, at the commencement of this issue.—*Editor.*]

Votes of Thanks.—At the conclusion of the discussion and on the call of the President, hearty votes of thanks were accorded Major Dalling, Dr. Hindle, and those who had brought specimens and related cases of interest.

H. E. Bywater, *Hon. Secretary.*

WEST OF SCOTLAND V.M.A.*

A meeting of the above Division was held in the Royal Hotel, Glasgow, on Wednesday, December 19th, 1934.

The President, Mr. James McFarlane, occupied the chair and the following members signed the attendance book: Messrs. D. Watt, A. Cruickshanks, W. L. Weipers, W. Watt, W. Jackson, H. H. Brodie, P. McIntyre, Professor G. W. Weir, Messrs. R. M. Smith, J. F. Taylor, D. Campbell and A. Thomson (Hon. Secretary). Messrs. W. Jackson Young and W. A. Gowans were present as visitors.

Apologies for absence were received from Dr. A. W. Whitehouse, Messrs. McGregor, Meikle, Sillers, Gibb, Robb, Mitchell and Abbott.

The minutes of the last meeting, as printed in *The Veterinary Record*, were taken as read and were signed as correct.

Arising out of the correspondence, the Secretary intimated that a copy of the Articles of Association of the N.V.M.A. was available for any members who wished to read them.

It was intimated by the Secretary that the donation to the Victoria Veterinary Benevolent Fund was due at this time, and it was agreed to send the usual donation of £4.

Captain C. Tracey was nominated for membership by the Hon. Secretary, seconded by Professor Weir.

A report was received from Captain W. Watt, as Divisional representative on Council, N.V.M.A., arising out of which he proposed that the Division make representation to the Scottish Branch to have the question of the expenses of Divisional secretaries being paid by the Council, N.V.M.A., raised at the next meeting of the Branch. He felt that while Council were carrying out their work in an excellent manner, Divisional opinions were not completely represented.

A report was received from Mr. J. F. Taylor, on the deliberations of the Committee to consider the Report of the Cattle Diseases Committee of the Economic Advisory Council.

The meeting then considered the possibility of holding a social evening at an early date, and it was left to the President and Secretary to see if this could be suitably arranged.

The members then retired for tea.

On resuming, a number of interesting subjects were presented for discussion in an informal manner, the President exhibiting a number of bones from a draught horse showing well-marked osteomalacia.

* Received for publication, February 13th, 1935.

Mr. W. Jackson Young had some specimens of the dog tapeworm *Tænia cucumerina* or, as it is now called, *Dipylidium caninum*.

A general discussion followed on the subject of hysteria in dogs. Mr. A. Cruickshanks instanced many cases which he had had, which recovered when the feeding of ordinary proprietary dog biscuits was discontinued and the dogs fed on sterilised biscuits. He was of opinion that either enzymic or putrefactive changes took place in the ordinary biscuits which were responsible for the setting up of an auto-intoxication in the animals affected.

The meeting terminated with votes of thanks to the members who had given reports, to the President for his conduct in the chair, and to those members who contributed to the discussions.

Alex. Thomson, *Hon. Secretary.*

In Parliament

The following questions and answers have been recorded in the House of Commons recently:—

Officers' Retirement (Proportionate Pensions)

Mr. Burnett asked the Secretary of State for India to what services recruited by the Secretary of State the right to premature retirement on proportionate pension extends; and how many officers of these services have availed themselves of these pensions since 1919, inclusive?

Sir S. Hoare: Eligibility to retire on proportionate pension is at present confined to members of the All-India Services and persons holding posts, other than listed posts, borne on the cadres of those services who were appointed or selected for appointment before January 1st, 1920, and who are not permanently employed directly under the Governor-General in Council.

I will circulate a list of the All-India Services in the *Official Report* [The list includes, of course, the Indian Veterinary Service—*Editor.*] The total number of officers who retired on proportionate pension between November, 1921, when the scheme was introduced, and the end of 1934 is 599.

. . . . .

Dairy Herds (Veterinary Inspection)

Mr. Glossop asked the Minister of Health whether he is aware that under the administration of the Milk and Dairies (Consolidation) Act, 1915, and the Tuberculosis Order, 1925, the West Riding County Council employ nine whole-time veterinary officers, Cheshire six, Derbyshire two, Staffordshire none, and Lancashire none; and whether he can state the reason for such varied administration, in view of the fact that these counties are all adjacent and form the North-West Region of the Milk Marketing Board?

The Parliamentary Secretary to the Ministry of Health (Mr. Shakespeare): Except that a staff of whole-time veterinary officers has, my right hon. Friend is informed, now been appointed by the Staffordshire County Council, the facts stated by my hon. Friend are generally correct so far as they go, but they are misleading because in some counties, for example Derbyshire and Lancashire, part-time veterinary officers are employed either exclusively or in addition to the whole-time staff. As regards the second part of the question, veterinary inspection of cattle is compulsory only in certain cases. Routine inspection is optional and not all county councils undertake it. My hon. Friend will be aware that this is one of the matters dealt with in the report of the Committee on Cattle Diseases which is at present receiving consideration.

Mr. Glossop: Will my hon. Friend tell me when some decision will be reached by the Diseases of Cattle Committee; and may I ask whether he is aware of the very great hardship suffered by farmers in the West Riding owing to the severe operation of the regulations there as compared with other counties?

Sir Joseph Lamb: Could the hon. Member who put the question say where he obtained his information that Staffordshire was an exception?

Mr. Shakespeare: I pointed out in the answer that that was incorrect. As regards the supplementary question put by the hon. Member, I agree that the position is not satisfactory, but I cannot promise any date by which a report can be made.

Mr. Rhys Davies: Are we to assume that the cattle of Lancashire are healthier than those of Derbyshire and Cheshire?

. . . . .

Milk Marketing Scheme

Mr. Glossop asked the Minister of Agriculture whether he is aware of the lack of uniformity of the administration of the Milk and Dairies (Consolidation) Act, 1915, and the Tuberculosis Order, 1925, by county councils in the North-West region of the Milk Marketing Board; and whether, owing to the higher costs of producing milk as a result of the efficient operation of these regulations in the West Riding of Yorkshire, he will make representations to the Milk Marketing Board with a view to producers in West Riding receiving a higher pool price than producers in other areas comprising the North-Western region?

The Minister of Agriculture (Mr. Elliot): I do not doubt that there are differences in the standard of administration of the legislation relating to milk in the region mentioned, as in other parts of the country. I may, however, point out that, under the scheme of the Milk Marketing Board for a register of accredited producers which is expected to come into operation on May 1st, producers who comply with the prescribed conditions for securing the purity and good quality of their milk will be entitled to a guaranteed quality premium.

. . . . .

Milk

Colonel Ropner asked the Minister of Agriculture the nature of the steps to be taken by the Milk Marketing Board during the current year to increase the consumption of liquid milk in this country?

Mr. Elliot: The main step taken by the Milk Marketing Board to increase the consumption of liquid milk in this country is the milk-in-schools scheme, details of which were laid before the House in September last. A further step is the initiation of a scientifically controlled experiment in selected schools and approved centres designed to demonstrate the nutritional value of milk. I hope shortly to be in a position to give the House particulars of this interesting development. A third step which the Milk Marketing Board are contemplating is a general publicity campaign in favour of liquid milk consumption, which will take place in the early spring. Particulars of this campaign will also be laid before the House in due course.

Mr. de Rothschild: As regards milk for schools, is the Minister aware that, instead of Grade A (t.t.) liquid milk being provided, what is provided at the present time is pasteurised milk, in most cases old milk, manufactured by dairies, and is not the liquid milk which the children are supposed to get?

Mr. Elliot: Any milk for schools is supplied under the authority and responsibility of the medical officers of health concerned, and it would be quite wrong for me to cast any aspersions on the competence of those officers.

Mr. de Rothschild: Is the Minister aware that the circulars which the Ministry of Health and the Board of Education have issued to schools have asked them to use pasteurised milk without inspecting it; and is he aware that pasteurised milk is often milk that has been kept for several months and is not fresh milk, whereas the farmers are prepared to provide fresh milk for these schools?

Mr. Elliot: It is clear that such representations should be addressed to the county authorities and the education authorities concerned. It would, as I have said, be quite wrong for me to reflect upon the professional competence of the medical officers in question.

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Cattle Diseases

Lieut.-Colonel Moore asked the Minister of Agriculture whether he is aware of the anxiety among breeders of Ayrshire cattle with regard to the continued importation into this country of cattle which are not subjected on landing to either the tuberculin test or the agglutination test for contagious abortion, and without any guarantee that they are free from contagious mammitis; and whether he proposes to take any steps to deal with this matter?

The Minister of Agriculture (Mr. Elliot): I have received representations, to the effect stated in the first part of the question, from the Ayrshire Cattle Herd Book Society and other Scottish societies, and I understand that the Scottish Agricultural Advisory Committee are now considering the whole matter. As at present advised, however, I doubt whether any useful purpose would be served by requiring the tests or guarantee suggested. Apart from the point that the absence of reaction to a single test would not necessarily indicate freedom from disease, there is no reason to beligve that the diseases mentioned are more prevalent among imported cattle than in native stock in this country.

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Anthrax (Imported Goats' Hair)

Mr. Eady asked the Home Secretary the number of cases of anthrax from infection of imported goats' hair for the years ended 1932, 1933, and 1934?

Sir. J. Gilmour: The following cases attributed to goat hair imported for the woollen trade have come to the notice of the Home Office—1932, four cases; 1933, three cases; 1934, four cases. I should add that in five of these cases other material was being handled, and one cannot say with certainty that the worker caught the infection from the goat hair, but the investigations indicated that this was most probably the case.

Mr. Eady: Did the Home Secretary take the smallness of these numbers into consideration when altering the order relating to disinfection against anthrax?

Sir J. Gilmour: Yes, Sir, it has been taken very carefully into consideration.

Scientific Research (State Expenditure)

Sir H. Samuel asked the Financial Secretary to the Treasury the estimated expenditure of the State in the present financial year upon scientific research, including grants through the Department of Scientific and Industrial Research, the Ministry of Agriculture and Fisheries, the Colonial Development Fund, and any other channels?

Mr. Cooper: The expenditure of the State upon scientific research in the current financial year is estimated as follows [The answer includes the following items.—*Editor.*]

	£
Colonial Services	7,000
Colonial Development Fund	28,500
Dominion Services	31,233
Ministry of Agriculture and Fisheries	327,232
Department of Agriculture for Scotland	47,180
Development Fund (direct grants) ...	18,091
Department of Scientific and Industrial Research	559,894
Vote for Scientific Investigation (including Agricultural and Medical Research Councils)	199,473
Ministry of Health	3,320

The above figures do not include expenditure in respect of salaries, etc., of administrative staff except in the case of the Department of Scientific and Industrial Research.

Notes and News

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events

Mar. 11th.—Meeting of the Editorial Committee, N.V.M.A., at 2, Verulam Buildings, Gray's Inn, W.C.1, at 4 p.m.

Mar. 15th.—Meeting of the South Wales Division, N.V.M.A., at Llanelly, at 3 p.m.

Mar. 27th.—Meeting of the Lancashire Division, N.V.M.A., at Liverpool.

April 1st.—R.C.V.S. Annual Fees due.

April 3rd.—R.C.V.S. Committee Meetings.

April 4th.—R.C.V.S. Committee Meeting.

April 5th.—R.C.V.S. Committee and Council Meetings. Council Meeting 2 p.m.

May 9th.—Last day for nominations for election to R.C.V.S. Council.

May 23rd.—Voting Papers issued R.C.V.S. Council Election.

Mar. 23rd.—Annual Meeting of the North of England Division, N.V.M.A., at Newcastle-on-Tyne.

May 30th.—Last day for return of Voting Papers R.C.V.S. Election.

June 6th.—R.C.V.S. Annual General Meeting, 12 noon; Luncheon, 1.15 p.m.
Annual General Meeting, Victoria Veterinary Benevolent Fund, 12.45 p.m.

June 13th.—D.V.S.M. Examination begins, Edinburgh.

July 29th—August 2nd: N.V.M.A. Congress at Belfast.

LADIES' AID FOR VETERINARY BENEVOLENCE

In three numbers of the comparatively short series of issues of *The Veterinary Record* published thus far in 1935 we have had the pleasure of inserting accounts of functions held by the ladies associated with the profession in aid of the Victoria Veterinary Benevolent Fund. This stimulating start to the year's activities on behalf of the Fund has, we now learn, resulted in the addition to its resources of no less a sum than £103 11s., derived as follows: Dance at Princes Restaurant, Piccadilly (January 17th) £35; Whist Drive at Grafton Street, Dublin (January 30th) £24; Supper-Dance at the Carlton Ballroom, Belfast (February 8th) £44 11s. It will be remembered, too, that on the occasion of the last meeting of the Council of the Fund grateful acknowledgment was made of the donation of £150 resulting from the efforts put forward by the Ladies' Guild on the occasion of the Edinburgh Congress, N.V.M.A.

In expressing the confident anticipation and earnest hope that the Guild, now so firmly established, will go from strength to strength, we wish to thank the members, in the name of the profession, for the sterling work they are doing to mitigate the misfortunes of veterinarians and their dependants who have fallen on difficult days.

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PERSONAL

Marriage.—At Christ Church Congregational Church, Llandaff North, on Saturday, February 16th, Hugh Tudor Hughes, F.R.C.V.S., B.Sc. (London); 26, Willow Street, Oswestry, to Mabel, younger daughter of Mr. and Mrs. W. John Bennett, Hazelhurst, Llandaff North.

. . . . .

On Leave.—Mr. F. J. Hood, M.R.C.V.S., has arrived home on leave from Tanganyika Territory.

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We learn with much pleasure that Mr. R. F. Bennett, M.A., Magdalene College, Cambridge, elder son of Mr. Ralph Bennett, F.R.C.V.S., of 48, Hornchurch Road, Romford, has been awarded the Hulsean Prize, valued at about £100.

* * * * *

R.C.V.S. OBITUARY

Collins, Edward. 6, Marlborough Road, Bradford. Graduated New Edinburgh, April 13th, 1887; died February 21st, 1935, aged 70 years.

The late Mr. Edward Collins

Mr. Edward Collins had been a familiar figure in Bradford and the Dales for nearly 50 years. His father, Mr. Thomas Collins, who died in 1898 at the age of 76, founded the practice in Manningham Lane, at premises now occupied by the R.A.O.B. near the Connaught Rooms. His son qualified as a veterinary surgeon from the New College, Edinburgh, at the early age of 22. Prior to taking over his father's practice he was in business at Ilkley, and subsequently the Bradford practice was removed to Marlborough Road.

Mr. Collins, who acted as veterinary inspector under the Diseases of Animals Act in the Bradford district, and had been veterinary surgeon to the Bradford City Police stables, was one of the few remaining old type veterinary surgeons, not only in dress but in manners and speech. "Despite his bluntness," says *The Bradford Telegraph and Argus*, "he was well liked and affectionately regarded by cattle dealers, farmers, and men in the horse trade.

"Mr. Collins was a member of the Yorkshire Veterinary Medical Society for many years, and honorary veterinary surgeon, with Mr. A. H. Watson, to the Great Yorkshire Show in Bradford last year."

Mounted police headed the cortege during part of its journey to Undercliffe Cemetery at the funeral on February 25th. Among the mourners were Alderman Angus H. Rhodes (chairman of the Bradford Watch Committee), Chief Superintendent F. Petty, and Inspector F. Allison, while the Yorkshire V.M.A. were represented by the President, Mr. A. H. Watson.

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FOOT-AND-MOUTH DISEASE

Foot-and-mouth disease restrictions, which had been in operation for the previous six weeks in South Dorset, were removed on March 5th.

Three counties were affected by an outbreak of foot-and-mouth disease which took place on February 26th, at Deddington, near Banbury, Oxfordshire.

The Ministry standstill order includes part of Northamptonshire and Buckinghamshire.

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CHIEF MEDICAL OFFICER, MINISTRY OF HEALTH

The Minister of Health and the President of the Board of Education announce, with great regret, that Sir George Newman, K.C.B., M.D., F.R.C.P., Hon. D.C.L., LL.D., F.R.C.S., is due to retire from the Public Service at the end of the current financial year, March 31st next. Sir George Newman has been the Chief Medical Officer of the Board of Education since 1907, and of the Ministry of Health since 1919.

The Minister and the President have appointed Arthur Salusbury MacNalty, Esq., M.D., F.R.C.P., a Senior Medical Officer of the Ministry and Deputy to the Chief Medical Officer, to the joint post thus vacated. Thomas Carnwath, Esq., D.S.O., M.B., has been appointed Deputy to the Chief Medical Officer in succession to Dr. MacNalty.

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ARMY VETERINARY SERVICE

London Gazette—War Office—Regular Army Reserve of Officers

Feb. 26th.—Maj. E. S. Oliver, having attained the age limit of liability to recall, ceases to belong to the Res. of Off. (Feb. 24th.).

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ANTI-GAS TREATMENT OF ANIMALS

Mr. T. F. Prime, M.R.C.V.S., a letter from whom on the above subject appeared in our last issue, has been informed by the Home Office, in response to an enquiry addressed by him to the Ministry of Agriculture and forwarded to that Department, that the question of anti-gas treatment of horses and cattle is to receive consideration in due course as the situation develops with regard to the protection of the human population against gas.

ANTHRAX INFECTION

The following summary of an inquest report from a recent issue of *The Yorkshire Evening Post*, is of some interest to veterinarians as introducing a possible explanation of the manner in which some of the isolated cases of anthrax in farm animals originate. It is clear that, as is now to be done with imported goat's hair before use in manufactured articles (as reported in our "In Parliament" notes last week), all shoddy, bones, etc., should be sterilised before utilisation as manures, etc.

An open verdict was returned at a Leeds inquest on George Stafford Shann, Bramham. The jury said that the man died from anthrax, but there was no evidence to show the cause of the disease.

Dr. John Gordon, lecturer in bacteriology at Leeds University, said he found a growth of anthrax bacilli in a swab taken from a pustule at the right side of Shann's neck.

The evidence showed that Shann had been engaged in moving shoddy from Tadcaster station to a farm at Bramham.

It was explained that shoddy was ground rags, and might contain wool or hair.

Dr. Gordon said the man might have scratched his face with anthrax germs under his finger nails.

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THE PARADE OF VAN HORSES

Lord Daresbury at a committee meeting held on February 27th, stated that, owing to alterations in Regent's Park the usual judging enclosure would no longer be available, and the parade of van horses on Easter Monday, April 22nd, would this year take place in the road opposite the St. John's Lodge exit, Inner Circle, Regent's Park. As a result of his recent appeal for funds to put the parade on a sound financial footing some £50 had been sent to him, and he desired to express his thanks to those newspapers who had printed his letter. Sir Kynaston Studd has consented to present the awards on Easter Monday at the grand march past at 1 o'clock.

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Corrigendum.—In connection with the publication in our issue of last week of the editorial article on "The Colonial Veterinary Services: The Need to Implement the Terms of the Lovat Report, 1929" (*15. 9. 261*), we desire to point out that the leader writer's script read "The other group, namely, the Theileria group" and by printer's error this was published (Col. 1, para. 2, line 21), as "The other famous group. . . ."

Correspondence

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents.

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AN ORGANISED VETERINARY SERVICE: N.V.M.A. SCHEME

To the Editor of the Veterinary Record

I had no intention of writing again on this subject, but as the President of the "National," in his letter published in *The Veterinary Record* of February 23rd accuses me of destructive criticism only, I would invite him to refer to *The Veterinary Record*, No. 25, Vol. xiv, page 707, where he will see in a report on a meeting of the Derbyshire Division under the heading "The Future of the Veterinary Profession" that "a free exchange of views took place in the discussion on this subject and as a result it was agreed that a resolution brought forward by Mr. Torrance should be forwarded to the N.V.M.A."

In the same volume of *The Veterinary Record*, page 871, appears the resolution with the discussion on it, from which it would appear that this resolution is being considered by the Special Committee appointed to deal with the report of the Cattle Diseases Committee of the Economic Advisory Council.

May I suggest that although my name is associated with this resolution, there may be something in it, and it certainly was proposed with the best constructive intent.

Permit me one more observation—when a jerry-built structure is erected on quicksands the obvious and only satisfactory method of dealing with it is to destroy it and rebuild a sound structure on a solid foundation.

Yours faithfully,

H. L. Torrance,
County Veterinary Officer.

Shire Hall,
Nottingham.
March 4th, 1935.

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"ATTESTED HERDS" SCHEME

To the Editor of the Veterinary Record

Sir,—I personally wish to congratulate the person responsible for the editorial paragraph entitled "'Attested Herds' Scheme of the Ministry of Agriculture," especially for the words "any" and "not" appearing therein in italics, in your issue of February 23rd, 1935.

It is inconceivable to me that any body in this age would be willing to revert to those days before Professor J. Basil Buxton introduced the double-intradermal tuberculin test; it also appears to me a dire reflection on the efforts of research, and expenditure of ability which were spent to evolve this revolutionary expedient.

It would be interesting to know exactly what forms the Ministerial mind had in view when they write about various "recognised tests," and by whom recognised? I should be glad to promote an appeal to the Ministry to amend this scheme to the effect that no other than the double-intradermal method of tuberculin testing be allowed to operate in this scheme, whether used by the practitioner employed, the whole-time veterinary officer or the Ministry's officials, if there are sufficient veterinarians of my own mind on this matter to back me up.

Yours faithfully,

J. Howard Jones,
Chief County Veterinary Officer, Glamorgan.

Sherwood,
Merthyrmawr Road,
Bridgend.
February 28th, 1935.

Advertiser's Announcement

A booklet giving full particulars of "Rakulin"—a new and successful agent for the treatment of contagious abortion in cattle—has been sent to every practising Veterinary Surgeon in the Kingdom.

The importance of "Rakulin" can hardly be over-estimated, and this will be appreciated when it is realised that this product has the therapeutic activity of a living culture, while at the same time it is absolutely free of any risk of causing an infection in a clean and healthy herd.

"Rakulin" is issued to Veterinary Surgeons *only* at the following prices—30 c.c., 7/6; 150 c.c., 30/-; 250 c.c., 45/-; 500 c.c., 90/-. Apply, Chas. Zimmermann & Co., 9 and 10, St. Mary-at-Hill, London, E.C.3.